

IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF TEXAS  
FORT WORTH DIVISION

UNITED STATES OF AMERICA, ) CASE NO. 4:21-cr-00005-O-1  
)  
Government, ) FORT WORTH, TEXAS  
)  
VS. ) AUGUST 26, 2022  
)  
THE BOEING COMPANY, )  
)  
Defendant. ) 8:30 A.M.

VOLUME 2 of 2  
TRANSCRIPT OF EVIDENTIARY HEARING  
BEFORE THE HONORABLE REED C. O'CONNOR  
UNITED STATES DISTRICT COURT JUDGE

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23  
24  
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I N D E X

FAMILIES' WITNESS: Volume 2

VICKIE NORTON -

Direct Examination by Mr. Cassell.....07

Cross-Examination by Mr. Jacobs.....85

Cross-Examination by Mr. Hatch.....144

Redirect Examination by Mr. Cassell.....185

Counsels' Closing Statements -

By Mr. Cassell.....197

By Mr. Duffy.....203

By Mr. Jacobs.....220

By Mr. Hatch.....233

By Mr. Cassell.....243

Reporter's Certificate.....262

Word Index.....263

## E X H I B I T S

FAMILIES' EXHIBITS: VOLUME 1

|   |    |    |
|---|----|----|
| Exhibit 1 - Mr. Keyes' Expert Report.....     | 13 | V1 |
| Exhibit 2 - KNKT Annex 13 Report.....         | 57 | V1 |
| Exhibit 3 - Ethiopian Interim Report.....     | 68 | V1 |
| Exhibit 4 - Final House Committee Report..... | 74 | V1 |
| Exhibit 5 - Email.....                        | 82 | V1 |
| Exhibit 6 - Email.....                        | 82 | V1 |
| Exhibit 7 - FAA CANIC Report.....             | 91 | V1 |
| Exhibit 8 - FAA CANIC Report.....             | 91 | V1 |
| Exhibit 9 - FAA CANIC Report.....             | 91 | V1 |
| Exhibit 10 - Press Release.....               | 93 | V1 |

FAMILIES' EXHIBITS: VOLUME 2

|   |    |    |
|---|----|----|
| Exhibit 11 - Captain Norton's Expert Report.....  | 07 | 08 |
| Exhibit 12 - FAA Summary Report.....              | 31 | 32 |
| Exhibit 13 - Excerpt of Mr. Forkner's Direct..... | 33 | 39 |
| Exhibit 14 - Excerpt of Closing Statements.....   | 39 | 41 |
| Exhibit 15 - 8.18.16 Email.....                   | 57 | 59 |

P R O C E E D I N G S

AUGUST 26, 2022

oOo

THE COURT: Please be seated. Okay. You have a witness here?

MR. CASSELL: We do, your Honor.

THE COURT: Let's get him up here.

MR. CASSELL: The families call Captain Vickie Norton.

THE COURT: Okay.

MR. CASSELL: And, your Honor, if I could just take 15 seconds to introduce to you several victims' family members that we have here today.

THE COURT: Yes.

MR. CASSELL: Paul Njoroge is here from Toronto who lost his wife, Carolyn, and three young children, Ryan, Kellie, and Rubi.

We also have Clariss, Chris, and David Moore who are the parents and brother of Danielle Moore, who died.

Nadia Milleron and Michael Stumo lost their daughter, Samya Stumo.

Ike and Susan Riffel, who lost both of their sons, Melvin and Bennett.

Naheed Noormohamed lost his father, Ameen Noormohamed.

1 And Javier de Luis, who lost his sister, Graziella  
2 de Luis.

3 THE COURT: Okay. Thank you all for being here.

4 (The oath was administered.)

5 THE WITNESS: I do, your Honor.

6 MR. DUFFY: Excuse me, your Honor, before you  
7 begin, Jerrob Duffy for the United States, we would ask that  
8 the additional witness be excluded, your Honor, during the  
9 course of the testimony. There's a second witness in the  
10 courtroom, Dr. Storesund.

11 THE COURT: Okay. Are these not experts?

12 MR. DUFFY: Well, your Honor, it's not expert with  
13 respect to the -- it's not as though they're going to  
14 summarize or take into account the testimony of this  
15 witness. We think the cross-examination of this witness  
16 might have an overlap with the second witness.

17 THE COURT: What do you say to that?

18 MR. CASSELL: I understand the Department to be  
19 objecting under Rule 615 that, under the sequestration  
20 rules, they should be able to exclude our witnesses.

21 Two points on that. First, that ship has already  
22 sailed. There was no invocation of the rule at the first  
23 hearing. We have provided to Dr. Storesund and to our  
24 current witness the testimony of Chris Moore, as if they  
25 were seated in the courtroom, because I plan to ask them --

1 Captain Norton, for example, and if we call Dr. Storesund  
2 later on we plan to ask him, have you heard testimony from  
3 the other witnesses?

4 THE COURT: Okay. I will overrule the objection.  
5 Go ahead and get started.

6 DIRECT EXAMINATION

7 (BY MR. CASSELL:)

8 Q. Captain Norton, could you state your name for the  
9 record, spelling your last name for the record?

10 A. Vickie Renee Norton. N-o-r-t-o-n.

11 Q. And I understand that you've written an expert  
12 report for this particular case?

13 A. That's correct.

14 MR. CASSELL: With the Court's permission, I think  
15 this is a continuation, so we will mark this as Families'  
16 Exhibit 11. We have a courtesy copy for your Honor, and I  
17 will provide copies to opposing counsel. So I believe they  
18 have a copy.

19 THE COURT: Very good. That will be admitted.

20 (Families' Exhibit 11 was marked for identification.)

21 (BY MR. CASSELL:)

22 Q. Do you recognize that document, Captain Norton?

23 A. I do, sir.

24 Q. What is it?

25 A. It is a copy of the expert report that I authored

1 in this matter dated March 31st, 2022.

2 MR. CASSELL: Your Honor, at this time the  
3 families would move the admission of Exhibit 11, Captain  
4 Norton's report.

5 THE COURT: Yes. That will be admitted.

6 (Families' Exhibit 11 was admitted into evidence.)

7 (BY MR. CASSELL:)

8 Q. I know that you have in that report an Appendix A  
9 which is your CV. I don't want to go through every line in  
10 your CV, but I'm wondering if we could highlight just a  
11 couple of things that are probably relevant to today's  
12 proceedings.

13 Regarding your education. What did you receive an  
14 undergrad degree in?

15 A. I received a bachelor's of science in mechanical  
16 engineering.

17 Q. And do you have any advanced degrees?

18 A. I do. I have a master's of science in aviation,  
19 aviation safety.

20 Q. And regarding your knowledge and experience on the  
21 issues we will be talking about today, approximately how  
22 long have you worked in the aviation sector?

23 A. Approximately 34 and a half years.

24 Q. And let me just take a quick rundown of some of  
25 the significant knowledge and experience you have.



1 Have you ever run into an aviation accident report  
2 or incident report?

3 A. Run into with regard, just review them or authored  
4 them or --

5 Q. Review them. Yeah, maybe let's start. Ever  
6 reviewed an incident or accident report?

7 A. Hundreds.

8 Q. And have you ever been involved in preparing one  
9 or sending one along to someone?

10 A. Yes, sir, I have.

11 Q. Have you ever been involved in test flight  
12 certification?

13 A. Yes, sir, I have.

14 Q. Could you just briefly explain what that  
15 experience has involved?

16 A. I worked for -- as an engineer for an airframe  
17 manufacturer when I was right out of college and part of  
18 that work was being part of the test flight team, gathering  
19 data for aircraft certification, brand-new certification, as  
20 well as aftermarket modifications to existing aircraft.

21 Q. Now, I notice on your CV there is a reference to  
22 you being a designated engineering representative or DER.  
23 Are you familiar with that entry, obviously?

24 Could you tell us a little bit about what being a  
25 DER involved?

1           A.     Sure. Under my employment with the airframe  
2 manufacturer, designated engineering representatives were  
3 allowed to -- and authorized is a better word -- to serve on  
4 behalf of the FAA in certain capacities pursuant to their  
5 actual skill and level of expertise.

6                     My particular skill was in the systems and  
7 equipment area. Primarily, I worked in brake testing at the  
8 time. I was authorized to act on behalf of the FAA with  
9 regard to witnessing dynamometer testing and other  
10 requirements necessary to fulfill the certification of  
11 aircraft.

12           Q.     Now, I also noticed on your CV that you were a  
13 member of something called the joint FAA/DAC weekly accident  
14 incident investigation report.

15                     Could you tell us a little bit about what that  
16 involved?

17           A.     Certainly. There were weekly meetings at the  
18 airframe manufacturer that encapsulated any incident or  
19 accident that may have happened with any of the company's  
20 fleet of aircraft, and essentially an in-house rundown of  
21 what we understood to be the facts of the incident or  
22 accident and what we needed to do, if anything, as a result  
23 of those incidents or accidents.

24           Q.     Now, regarding special skills that you might  
25 possess today, I notice on your CV that you are a full-time

1 airline captain for a major U.S.-based airline; is that  
2 correct?

3 A. That is correct.

4 Q. In connection with that employment, have you ever  
5 had any interaction with a Boeing 737 aircraft?

6 A. I have.

7 Q. Roughly, how often do you interact with that kind  
8 of an aircraft?

9 A. Well, for context, I'm type-rated on the  
10 Boeing 737. I currently fly that aircraft. That is, as  
11 captains we only fly one aircraft type at a time, due to the  
12 concept that we have to know procedures and numbers and have  
13 things in our heads.

14 I'm type-rated on multiple aircraft, but I  
15 currently only operate the Boeing 737 fleet of aircraft  
16 pursuant to the fact that -- you know, flight attendants can  
17 get on any type of aircraft, but we pilots can only operate  
18 one type at a time.

19 I'm also -- previously I had operated our 737-300  
20 and 500 series, but those are no longer -- we don't use  
21 those aircraft anymore.

22 Q. And in connection with interacting with the 737,  
23 you mentioned the various types. Have you ever interacted  
24 with the 737 MAX?

25 A. Yes, sir. I currently fly that aircraft, or in my

1 current position, I can fly any aircraft from the 700, 800,  
2 900, 900ER, which is extended range, or the MAX. It just  
3 depends on which aircraft type the company has decided is  
4 going to be used on a certain segment for that day.

5 Q. When was the last time you flew a 737 MAX?

6 A. Two days ago.

7 Q. And how many times have you been the captain on a  
8 737, Boeing 737?

9 I'm sorry. Let me rephrase that question. I know  
10 that pilots like to talk about hours.

11 Can you give the Court a sense of how many hours  
12 you've been interacting with the 737.

13 A. Yes. Thank you for that.

14 We tend to just categorize our time in terms of  
15 total hours. I have approximately 3400 hours. Of my almost  
16 16,000 hours, roughly 3400 are on the 737.

17 Q. You mentioned that I think 48 hours ago you were  
18 captaining a 737 MAX. Was anyone assisting you or were you  
19 in charge?

20 I have a general sense of what captains do on a  
21 flight, but could you just briefly describe what your duties  
22 would be in connection with, for example, that flight?

23 A. They're numerous. For the purposes of what I  
24 understand your question to be, I served as the captain. I  
25 was also the pilot flying of that particular segment.

1                   So we -- up front as pilots, we alternate flying  
2 segments, unless there's an operational reason for myself to  
3 not allow the first officer, based on perhaps weather  
4 limitations or his or her inexperience in certain  
5 situations.

6                   In addition to my numerous captain duties, I was  
7 also the pilot flying that segment and the first officer was  
8 the pilot monitoring, as we refer to him or her.

9           Q.     All right. And then I noticed on your CV that you  
10 also have a second job with something called MEA Forensic  
11 Engineers and Scientists. Could you briefly tell us what  
12 that second job involves?

13           A.     It involves serving as an expert, as I am here  
14 today, in the event of aircraft accidents or incidents for  
15 which my expertise has been retained.

16           Q.     And can you tell us, just generally, what sorts of  
17 projects you handle in that capacity then?

18           A.     It covers a very broad realm. I have investigated  
19 or been party to, served as an expert on matters ranging  
20 from small general aviation, FAR Part 91-type accidents,  
21 fixed-wing or rotor craft, all the way up to large  
22 international FAR Part 121 accidents, as we're here to  
23 discuss today.

24           Q.     I want to ask you now just briefly about some of  
25 the training that you've had in connection with these

1 various jobs, maybe just returning to your pilot job.

2 And without going into any specific proprietary  
3 details, just generally, what type of training is required  
4 for you to be able to captain or pilot the 737 MAX, for  
5 example, that you did a couple of days ago?

6 A. Well, the training is fairly extensive. Anytime  
7 you are trained on a new aircraft type, you must familiarize  
8 yourself with and be current with respect to knowledge  
9 contained in the aircraft flight manual for that particular  
10 aircraft to work for an airline.

11 You must also know what we call the contents of  
12 the flight operating manual, which are policy, procedure,  
13 administrative-type things. Specific to the aircraft, we  
14 then go through various levels of training, building upon  
15 our knowledge and skill set, culminating in an oral exam  
16 administered by a check airman at the company and  
17 potentially witnessed by the FAA, as well as a practical  
18 exam in a full-flight simulator before we are fully  
19 qualified to fly.

20 And at that point, we then go out and operate in  
21 the real world, with passengers, in the captain's seat but  
22 with a qualified second captain, who's called a line check  
23 airman in the right seat, and you get at least 20 hours of  
24 supervised flight time. And at that point, you're fully  
25 signed off to go operate and carry passengers.

1 Q. You mentioned flight simulator training. Have you  
2 ever been inside a flight simulator in connection with a  
3 737 MAX?

4 A. Hundreds of times.

5 Q. All right. Let's now turn to -- I noticed on your  
6 CV that I think you provided some deposition and trial  
7 testimony in connection with aviation issues in other cases;  
8 is that correct?

9 A. That is correct.

10 Q. I think we were looking at something around a  
11 dozen times where you've served as an expert in various  
12 matters?

13 A. I think that's correct. We arrived at maybe  
14 slightly over a dozen.

15 Q. I think you are aware that seated at this table  
16 here are representatives of the United States Department of  
17 Justice.

18 Have they ever retained you as an expert to  
19 provide expert testimony on aviation issues?

20 A. Yes, sir, they have.

21 Q. And if the Judge wanted to see your qualifications  
22 more extensively set out, I'm assuming he could look at your  
23 CV and see the information there?

24 A. I assume so, yes.

25 Q. All right. Well, now let me turn directly to the

1 opinions that you're going to be offering here today. My  
2 understanding is that you are going to present three  
3 opinions. Let me just set those out in the record just so  
4 that we're clear what your expert opinions are.

5 First, is it your expert opinion that had Boeing  
6 presented to the FAA AEG a complete, accurate, and truthful  
7 description of MCAS, the AEG would have mandated Level-D  
8 flight simulator training?

9 A. That is my opinion, sir.

10 Q. And then secondly, is it your opinion that FAA AEG  
11 requirements are followed by foreign carriers?

12 A. That is also my opinion.

13 Q. And third, is it also your opinion, to a  
14 reasonable degree of professional certainty and industry  
15 experience, that had the pilots of Lion Air Flight 610, and  
16 Ethiopian Airlines Flight 302, undergone comprehensive  
17 Level-D simulator training, neither of those accidents would  
18 have occurred, and thus the lives of 346 people would have  
19 been saved?

20 A. That is my opinion.

21 Q. Just to clear up one thing. I know you're an  
22 expert generally in these aviation issues we've been talking  
23 about.

24 Are you offering these opinions to a reasonable  
25 degree of scientific and aeronautic certainty?



1 A. Yes, sir, I am.

2 Q. I think we were talking about this previously in  
3 some of the hearings here.

4 Do you understand the level of proof required  
5 today is a preponderance of the evidence, or 51 percent of  
6 the evidence?

7 Is that your understanding of the standard here  
8 today?

9 A. Yes, it is.

10 Q. All right. Now, I want to talk briefly about the  
11 materials that you reviewed in reaching your expert opinion,  
12 and I believe I just wanted to double-check with the  
13 courtroom deputy.

14 We had some exhibits that were previously admitted  
15 in the earlier hearing. I'm not going to need them right at  
16 this second, but at some point, I might need access to some  
17 of them in this hearing.

18 THE COURT: I've got them all right here.

19 MR. CASSELL: Oh, you've got them there. Great.  
20 Thank you, your Honor.

21 (BY MR. CASSELL:)

22 Q. I noticed in your report which was filed on  
23 March 31st, 2022, in Appendix B you go through some  
24 materials that you reviewed.

25 A. Yes, sir.

1 Q. I just wanted to highlight a couple of the  
2 materials. Looks like item two is the Deferred Prosecution  
3 Agreement in this case.

4 Are you familiar with a section of that Deferred  
5 Prosecution Agreement, the Statement of Facts that has 54  
6 separately numbered paragraphs?

7 A. I am familiar with that.

8 Q. Are the opinions you are offering today consistent  
9 with all those 54 paragraphs in the Statement of Facts?

10 A. Yes, they are.

11 Q. I notice here in item seven, which is the final  
12 House Transportation Committee Report on the design,  
13 development, and certification of the 737 MAX, that's  
14 already been accepted into evidence as Families' Exhibit 4,  
15 but I just wanted to ask you one question about it -- or two  
16 questions, I guess. Lawyers one question -- two questions.

17 Have you had a chance to review that report?

18 A. I have.

19 Q. And did you find the information contained in that  
20 report to be trustworthy?

21 A. I did.

22 Q. Also, just to kind of skip ahead now. It looks  
23 like there's an item eight and item nine. Those are the  
24 Indonesian and Ethiopian accident reports connected with the  
25 two crashes in this case?

1 A. That's correct.

2 Q. Did you find the information in those reports to  
3 be trustworthy as well?

4 A. I did.

5 Q. Now, I noted at the outset your report was  
6 prepared and submitted to the Court on March 31st, four or  
7 five months ago.

8 Since March 31st has any new information become  
9 available to you that you've consulted in reaching your  
10 conclusions?

11 A. I was provided and reviewed the trial testimony of  
12 Mr. Mark Forkner.

13 Q. I'm sorry, you reviewed some testimony from the  
14 case United States vs. Mark Forkner?

15 A. That's correct.

16 Q. And that has become available to you since  
17 March 31st?

18 A. That's correct.

19 Q. Let's then turn to your first opinion to set the  
20 stage. Had Boeing presented the FAA AEG a complete,  
21 accurate, and truthful description of MCAS, the AEG would  
22 have mandated Level-D flight simulator training.

23 I notice in the expert opinion you've referenced  
24 MCAS. I take it then you are familiar with MCAS?

25 A. I am.

1 Q. Do you have any specialized knowledge or  
2 experience about MCAS that lets you offer opinions connected  
3 to MCAS and safety issues?

4 A. I would offer that my experience is at least  
5 twofold. I am fully aware of the description of the system  
6 as it was eventually made known, and what the intent of the  
7 system was, and the reason for its inclusion on the 737 MAX.

8 Additionally, my opinion is based on expertise of  
9 having and currently operating the aircraft as a captain and  
10 having undergone the training associated in the  
11 post-certification return-to-service version of the 737 MAX.  
12 I was required to undergo the training surrounding MCAS and  
13 have done so.

14 Q. Without going into any of the proprietary details  
15 connected with your specific training, would it be fair to  
16 say that you've been specifically trained in responding to  
17 improper or erroneous MCAS activation?

18 A. That is correct. I have been so trained.

19 Q. All right. Well, now let's turn to some  
20 information that I think sets the stage for your opinions  
21 here.

22 I notice in the Statement of Facts connected with  
23 this case there are numerous references to something called  
24 the expanded operational scope of MCAS.

25 Are you familiar with those descriptions of an

1 expanded operational scope?

2 A. Yes, sir, I am.

3 Q. Could you help us understand?

4 Maybe one way would be to approach that would be,  
5 do you have an understanding of what the original operating  
6 scope of MCAS was?

7 A. I believe I do. To my understanding, the original  
8 operating scope of MCAS was to -- its purpose was to provide  
9 pitch stability in a flight test maneuver referred to  
10 commonly in the industry as a wind-up turn.

11 Q. If I could just stop you right there. I've seen  
12 that reference, and I don't know that I've really got a good  
13 handle on what that might look like.

14 Would it help you to illustrate your testimony if  
15 you had a model of a 737 MAX and perhaps you could show us  
16 what a high-speed wind-up turn might look like?

17 A. I can certainly attempt to do that, yes.

18 MR. CASSELL: With the Court's permission, we've  
19 shown it to opposing counsel previously.

20 For the record, I'm providing a model aircraft  
21 that resembles a 737 MAX aircraft.

22 (BY MR. CASSELL:)

23 Q. What is this high-speed wind-up turn that we've  
24 heard about in connection with this case?

25 A. The high-speed wind-up turn is a maneuver required

1 in flight testing, in flight test and certification of the  
2 aircraft. It is not a maneuver that someone like myself  
3 would normally ever expect to put the aircraft through in  
4 the normal course of passenger-revenue flight. So it's  
5 strictly a certification maneuver.

6 To the best of my ability to try, it is a  
7 nose-high attitude. So perhaps it would help, the aircraft  
8 operates in three axes. Pitch is nose up, nose down. Roll  
9 is, looks like that (indicating). It's rolled to one side  
10 or the other, if you will.

11 And probably the most commonly misunderstood axis  
12 is the yaw axis. Essentially, if the airplane remains flat  
13 and just goes back and forth, driven by the rudder on the  
14 tail. Those are the three axes.

15 A wind-up turn, to the best of my ability, I've  
16 never sat in the back of a flight test, but it's been  
17 described to me and I understand what the maneuver is. It's  
18 a very nose-high, steep angle-of-attack roll which pulls,  
19 and the aircraft continues to turn while it continues to  
20 climb and accelerate, and it imparts a load force on the  
21 aircraft, and essentially is designed, to the best of my  
22 understanding, to make sure that even the manufacturer's  
23 flight test pilots are able to both control the aircraft as  
24 it operates in this upper corner of the envelope, preventing  
25 the aircraft from stalling.

1                   And secondly, that it behaves and feels -- the  
2                   tactile feedback to the flight test pilot feels similar to,  
3                   in this case, to the NG version of the 737 that was  
4                   previously certified. And that's all. That's the best way  
5                   I can explain what the turn would look like.

6                   Q.     And you mentioned that this was a certification  
7                   maneuver. So this was not something that pilots like you  
8                   would ever expect to encounter in day-to-day commercial  
9                   flights?

10                  A.     That's correct.

11                  Q.     I notice in the Statement of Facts there's a  
12                  reference to the FAA AEG being told about this limited  
13                  operational scope of MCAS.

14                         Are you familiar with that Statement of Facts, for  
15                  example?

16                  A.     I am.

17                  Q.     And I've seen references in some materials to the  
18                  fact that MCAS, as you've just described, would need to  
19                  satisfy three different parameters or criteria before it  
20                  would activate or fire.

21                         Are you familiar with the different parameters  
22                  that MCAS had originally before it could fire?

23                  A.     Yes, sir, I am.

24                  Q.     Could you just briefly describe what those three  
25                  parameters were?

1           A.     Originally there was a speed requirement before  
2     MCAS could activate or fire, as we say. That speed  
3     requirement was 0.6 to 0.8 Mach. So a percentage of 60 to  
4     80 percent of -- well, Mach 1.0 is the speed of sound, so --  
5     versus referencing speed to actual indicated airspeed, there  
6     was a percentage of Mach requirement. And again, that was  
7     .6 to .8.

8           The second parameter was a load factor on the  
9     aircraft in excess of 1.3 G's or -- G's meaning gravity --  
10    and that's when you're pulling and turning, you're exerting  
11    a load factor on the airplane. So it was originally set to  
12    exceed -- be in exceedence of 1.3 G's.

13          And then the third parameter was an excessive  
14    angle of attack, which is, again, that's the aircraft  
15    pitching up. The angle of attack is the measure of the  
16    relative wind to the chord line of the wing, the front of  
17    the airplane.

18          So when the aircraft is pitching up to a degree,  
19    an increasing degree, that angle of attack is increasing.  
20    And there was a parameter set on excessive angle of attack  
21    as well.

22          So all three of those parameters needed to be  
23    satisfied in order for MCAS to activate in its original  
24    design.

25          Q.     So it's originally designed, just to sum up, it



1 sounds like those three parameters would restrict MCAS to  
2 firing in very, very, very unusual circumstances.

3 Would that be a fair statement?

4 A. That's very fair.

5 Q. Now, did there come a time when Boeing expanded  
6 the operational scope of MCAS?

7 A. To my understanding, yes.

8 Q. And I think we actually have a paragraph in the  
9 Statement of Facts, paragraph 25, that talks about this  
10 expanded operational scope.

11 A. Yes.

12 Q. Can you tell us how the operational scope of MCAS  
13 was expanded?

14 A. To my understanding, the speed requirement was  
15 reduced from the 0.6 to 0.8 Mach, all the way down to 0.2  
16 Mach and the requirement for load factor considerations was  
17 removed in its entirety.

18 Q. And is it your understanding based, for example,  
19 on the Statement of Facts, that Boeing did not disclose this  
20 expansion to the FAA AEG?

21 A. Sir, that is my understanding.

22 Q. Would it have been significant for members of the  
23 FAA AEG to learn about this expanded operational scope  
24 of MCAS?

25 A. It would have been extremely significant, yes.

1 Q. Can you explain?

2 Why would it have been significant to the training  
3 component of the FAA to learn about this expansion?

4 A. Well, in essence, those two changes resulted in  
5 what should have been a system that was completely benign,  
6 in large part invisible to pilots such as myself in normal  
7 operations.

8 It took such a system and made it capable of being  
9 something pilots like myself could see on every  
10 passenger-carrying revenue flight, save but for a  
11 single-point failure.

12 Q. So if there's what, I guess, one failure on the  
13 angle of attack sensor, then that could fire MCAS now?

14 A. Yes, sir. A single angle of attack. Not even  
15 both of them, just one of them. So, in essence, if you will  
16 allow, an analogy would be you buy a new car and your  
17 accelerator can stick only if you're going 120 miles an hour  
18 or more.

19 And at some point before they actually certify the  
20 vehicle, they make a change and decide that your accelerator  
21 can stick at 35 miles an hour or above but don't disclose  
22 that to the buyer. And essentially that's the kind of  
23 change.

24 It's a single change, but it opens up the scope  
25 for potential failures to this broad range that was never

1 expected to be covered or ever experienced by a pilot such  
2 as myself.

3 Q. Well, let's talk then about what the FAA might  
4 have done, the FAA AEG to be precise, if they learned a  
5 little bit more about MCAS.

6 I think the Court has heard and everybody that's  
7 familiar with the case has heard about these different  
8 levels of training that the FAA AEG might have ordered in  
9 connection with MCAS?

10 A. Yes.

11 Q. And is it your understanding that the FAA AEG,  
12 based on Boeing's lies, ordered Level-B training in  
13 connection with the 737 MAX?

14 A. That is my understanding.

15 Q. I understand then the Level D and Level E would be  
16 at the higher end of training that the FAA could have  
17 ordered?

18 A. Yes, sir. The differentiation in Level D and E is  
19 that training would be required in a multimillion-dollar,  
20 full-flight, full-motion simulator.

21 Once you get to Level D, that is the requirement  
22 that pilots actually step into a full-flight motion-based  
23 simulator for training.

24 Q. All right. And again, now, to return to our  
25 Statement of Facts just briefly.

1                   Is it an accepted fact to your understanding that  
2                   because of Boeing's intentional withholding of information  
3                   from the FAA AEG, the final version of the 737 MAX FSB  
4                   report lacked information about MCAS, and relevant portions  
5                   of the 737 MAX FSB report were materially false, inaccurate,  
6                   and incomplete; is that your understanding?

7                   A.     That is my understanding based upon testimony I  
8                   just provided, for the simple fact that two of the three  
9                   requirements were -- one was materially altered and the  
10                  second was removed in its entirety. So, yes, I agree with  
11                  that.

12                  Q.     Now, against this backdrop, and in light of your  
13                  very considerable experience in aviation matters, I want you  
14                  to create a mental picture of a situation that's identical  
15                  to the actual real world facts of this case except we're  
16                  going to change one fact.

17                  I want you to assume, and this will be the changed  
18                  fact here, that Boeing had been a law-abiding corporation  
19                  and had not committed its criminal conspiracy of obstructing  
20                  the FAA AEG by concealing the expanded operational scope of  
21                  MCAS. How would the FAA AEG world have been different if  
22                  Boeing had been a law-abiding citizen, or law-abiding  
23                  company, I guess?

24                  A.     Well, sir, the best answer is it would look like  
25                  the world does today. Pilots such as myself and every

1 operator of the 737 MAX would be familiar with the system  
2 and have information about the system included in our  
3 manuals, full description of the system and what its  
4 function is, what its purpose, what its intent was, if you  
5 will.

6 How to accurately respond to any anomalies or  
7 system failures and go through actual full-flight simulator  
8 training to be prepared to deal with those emergencies.

9 And I believe the world would look different, that  
10 we would have 346 people sitting among us and not have  
11 perished in two different accidents that were preventable.

12 Q. With regard to the different levels of training, I  
13 think we just established that, in the real world, based on  
14 Boeing's conspiracy of lies, Level-D training was ordered.

15 What if there was not that conspiracy of lies?

16 What level of training, in your opinion, would the  
17 FAA AEG have ordered?

18 A. Could you repeat that? I think you misspoke and  
19 maybe you intended to say Level B.

20 Q. Yeah, that was a poor question. Let me take  
21 another -- let me try to go down the runway again on  
22 that one.

23 We know that the real world had Level-B training  
24 for pilots transitioning to the MAX.

25 In this hypothetical world that you were just

1 describing, what level of training would the FAA AEG have  
2 ordered?

3 A. Level D at a minimum, in my opinion.

4 Q. You mentioned "at a minimum."

5 Could they have gone higher than Level D?

6 A. There's a next level. It's still full-flight  
7 simulator training. It's really specialized training, not  
8 in just a full capacity of generalized Level-D training  
9 across all the systems in an aircraft, but it's full-flight  
10 simulator training that's more specialized would be my  
11 understanding.

12 Q. Now, given the FAA --

13 By the way, what is the FAA AEG's mandate in  
14 connection with safety issues?

15 A. They are required to determine what level of  
16 training is appropriate for newly certified or modified-type  
17 aircraft.

18 Q. And would they have any choice about avoiding  
19 simulator training if they had known the truth about MCAS  
20 from Boeing?

21 A. I don't believe, in my opinion, after all the  
22 facts were borne out and the analysis was complete, that  
23 they would have had -- they would have had no choice but to  
24 order at least a minimum of Level-D training due to the  
25 potential catastrophic effects of uncommanded MCAS failures.

1 Q. I want to jump ahead a couple of years now. We  
2 talked about what the FAA AEG ordered before the crashes and  
3 then there were the two crashes. I want to jump to January  
4 of 2022.

5 Did Boeing ultimately agree that flight simulator  
6 training was appropriate for pilots transitioning to the 737  
7 MAX?

8 A. It's my understanding that they did, yes.

9 Q. And again, if we're looking at that time frame, a  
10 couple of years down the road, did the FAA ultimately  
11 require flight simulator training for the 737 MAX?

12 A. Yes, sir, they did.

13 MR. CASSELL: Your Honor, with the Court's  
14 permission, I would like to approach the witness, and I will  
15 provide opposing counsel, but I would like to provide a copy  
16 of Families' Exhibit 12 marked for identification.

17 (Families' Exhibit 12 was marked for identification.)

18 (BY MR. CASSELL:)

19 Q. Do you recognize this document?

20 A. I do.

21 Q. And just briefly, what is that document there?

22 A. It summarizes the FAA's complete review of the  
23 issues surrounding the 737 MAX prior to its approval for  
24 return to service.

25 Q. And I know there's a lot of detailed information

1 about some modifications to MCAS and various other things,  
2 but salient to this morning's hearing, does this document  
3 reflect the FAA ordering flight simulator training at  
4 Level D or above for 737 MAX?

5 A. Yes, it does.

6 MR. CASSELL: Your Honor, at this time I would  
7 move the admission of Families' Exhibit 12.

8 THE COURT: It will be admitted.

9 (Families' Exhibit 12 was admitted into evidence.)

10 (BY MR. CASSELL:)

11 Q. Now, you mentioned in your expert opinion that the  
12 FAA AEG would have ordered Level-D training. Have you  
13 reviewed any materials recently that correspond to your  
14 opinions on those issues?

15 A. Well, the strongest piece of material that I  
16 reviewed that corresponded to my opinion is the testimony of  
17 the head of the AEG, Miss Stacey Klein, who testified under  
18 oath that, had the FAA AEG been made aware of MCAS's  
19 expanded scope, that she, herself, would have ordered such  
20 training as the head of the AEG, which corresponds directly  
21 to what I suspected the FAA AEG would do, had they known the  
22 entire scope.

23 Q. So, and that testimony was given in this very  
24 courtroom?

25 A. That's my understanding.



1 Q. And these very prosecutors elicited testimony from  
2 Stacey Klein, sitting in the witness box, that she would  
3 have ordered Level-D training?

4 A. That's what I read in the testimony. Yes, sir.

5 MR. CASSELL: All right. Your Honor, again with  
6 the Court's permission, I would like to approach with trial  
7 transcripts. We will provide a copy to -- yeah, Families'  
8 Exhibit 13.

9 (Families' Exhibit 13 was marked for identification.)  
10 (BY MR. CASSELL:)

11 Q. Do you recognize the document that's been marked  
12 for identification as Families' Exhibit 13?

13 A. I do.

14 Q. That's an excerpt from the trial of United States  
15 vs. Mark Forkner?

16 A. That's my understanding, yes.

17 Q. And I'll represent to you that what you have in  
18 front of you is the entire direct testimony of Stacey Klein,  
19 who was the head of the FAA AEG at the relevant time.

20 A. Okay.

21 Q. If I could direct your attention now to a  
22 particular page in that transcript, page 326.

23 A. Your Honor, if the Court would allow, I've made  
24 the grave error of coming up here without my reading  
25 glasses.

1           The FAA says I have to have these to fly, so I  
2           should probably use them to read.

3           Page number again, please?

4           Q.    Yeah. We're looking for page 326 of this  
5           transcript, line five.

6           A.    Okay. I have it.

7           Q.    I'm going to just read you a passage. I think  
8           that's probably the quickest way to do that. And then ask  
9           you whether this passage corresponds in any way with your  
10          testimony today.

11          Question from the United States Department of  
12          Justice: "How could knowing that fact, [i.e., that MCAS was  
13          operating down to Mach .2] have affected your evaluation of  
14          the 737 MAX?"

15          Answer: "It would have affected the Level-B  
16          determination."

17          Question: "How so?"

18          Answer: "The evaluation. We would have had to  
19          redo the evaluation for all the required pilot training  
20          maneuvers that are required under our regulations. And upon  
21          doing so, that would determine if Level-E training could be  
22          sufficient."

23          Question: "Level-B training to be sufficient or  
24          insufficient?"

25          Answer: "No. I said Level-E training would be

1 sufficient was what the determination was after we evaluated  
2 it."

3 Question: "Level-E training was what kind of  
4 training?"

5 Answer: "Full-flight simulator training."

6 How does Stacey Klein's sworn testimony correspond  
7 to the opinions that you are giving here today?

8 A. It directly corroborates my opinion.

9 THE COURT: Do you need Stacey Klein's testimony,  
10 because I found her to lack credibility. She missed  
11 meetings that she was supposed to attend -- and no offense  
12 to the government on this point, but she had missed meetings  
13 she was supposed to attend pursuant to her role at the  
14 FAA AEG. She was not very good when she was cross-examined.  
15 And in true government fashion, she's been promoted as a  
16 result.

17 MR. CASSELL: So a couple of thoughts on that,  
18 your Honor. First is, we do not need Stacey Klein's  
19 testimony.

20 THE COURT: Okay.

21 MR. CASSELL: But you will recall what happened in  
22 this courtroom three weeks ago, where the United States  
23 Department of Justice, having adduced that very testimony,  
24 then cross-examined our witness and saying, hey, who knows  
25 what the heck the FAA would have done. This testimony is

1 right on point as to what Stacey Klein would have done.

2 THE COURT: If you believe Stacey Klein.

3 MR. CASSELL: Right. So there's now a second  
4 point there. You've referenced some concern about her  
5 missing some meetings, which attorneys for Mark Forkner were  
6 claiming involved presentations of MCAS, so on and so forth.

7 Mark Forkner's attorneys were completely entitled  
8 to make those kinds of arguments in that trial, but in this  
9 proceeding, there's a stipulated Statement of Facts from  
10 both Boeing and the Department of Justice that Boeing  
11 deceived the FAA and did not disclose this information.

12 So the kinds of things that you're suggesting may  
13 or may not have occurred in the Forkner trial are  
14 inconsistent with the world that we have in this particular  
15 case.

16 Now, perhaps the reason you found her to be  
17 inconsistent is the United States Department of Justice did  
18 not adequately prepare that witness to face  
19 cross-examination from Mark Forkner's attorneys and some of  
20 the missed meetings.

21 If the Department of Justice will give us the  
22 relevant information, and you know we have a motion pending  
23 to receive all the relevant information, we think we could  
24 prove that this particular testimony is indeed entirely  
25 accurate.

1 THE COURT: Let's just assume, though, whether  
2 they prepared her or did not prepare her, that she testified  
3 honestly when she was here, I still -- assuming she did,  
4 which we probably should operate on that assumption, I still  
5 find that she lacks credibility.

6 But to your point, they have made these  
7 stipulations and they are what they are. I'm just letting  
8 you know to the extent you want --

9 MR. CASSELL: Yes.

10 THE COURT: -- to the extent you want her to focus  
11 heavily on Miss Klein, I'm just letting you know that, in my  
12 view, undermines her opinion as well.

13 MR. CASSELL: Right.

14 MR. HATCH: And, your Honor, I was listening  
15 carefully, and Mr. Cassell had not offered this into  
16 evidence, but I will just take this opportunity to say on  
17 behalf of Boeing, we would object to this hearsay coming in  
18 through Captain Norton. We did not participate in that  
19 trial, as the Court knows, nor was this a disclosed piece of  
20 Captain Norton's expert materials.

21 THE COURT: Okay. I will overrule that.

22 MR. CASSELL: All right.

23 (BY MR. CASSELL:)

24 Q. And just for the record, if we were to go to  
25 page 379 through 380, we would see similar testimony from

1 Stacey Klein, that she would have ordered full-flight  
2 simulator training had she been provided with all of the  
3 information from Boeing.

4 Is that your understanding as well, Captain  
5 Norton?

6 A. It is, sir.

7 MR. CASSELL: At this time, your Honor, we would  
8 move the admission of Families' Exhibit 12. We would note,  
9 I think you've already overruled the hearsay objection from  
10 Boeing. Of course, this is also an admission from the  
11 United States government and therefore would be admissible  
12 against the government as a party admission.

13 THE COURT: So Exhibit 12 is the report?

14 MR. CASSELL: Oh, I'm sorry. This would be  
15 Exhibit 13. I apologize.

16 THE COURT: Yes.

17 MR. HATCH: Your Honor, may I ask Mr. Cassell,  
18 does this include Miss Klein's entire testimony, or just  
19 excerpts of her testimony?

20 MR. CASSELL: Includes the entire direct  
21 testimony.

22 MR. HATCH: So it excludes the cross-examination?

23 MR. CASSELL: Yes.

24 MR. HATCH: Then I object for the additional  
25 reason, your Honor, that it's not a full record even of her

1 testimony which is hearsay.

2 THE COURT: Okay. Well, I will admit this, and I  
3 will allow you to submit the cross-examination transcript as  
4 well.

5 (Families' Exhibit 13 was admitted into evidence.)

6 MR. CASSELL: Your Honor --

7 THE COURT: I sat through the testimony so I know  
8 what she said.

9 MR. CASSELL: I would like to now show you what's  
10 been marked, or I guess the next exhibit is 14. Is that  
11 where we are?

12 And this is the excerpt of the closing statements.  
13 If I might approach the witness, your Honor?

14 THE COURT: Give my copy to her.

15 MR. CASSELL: Huh?

16 THE COURT: Give my copy to her.

17 (Families' Exhibit 14 was marked for identification.)

18 (BY MR. CASSELL:)

19 Q. Do you recognize what's been marked for  
20 identification as Families' Exhibit 14?

21 A. I do.

22 Q. And I will represent to you that that is the  
23 closing argument of the United States Department of Justice  
24 in the criminal trial of United States vs. Forkner.

25 A. Okay.

1 Q. I would like to direct your attention to page 681  
2 of the transcript. Again, the closing argument by one of  
3 Mr. Jacobs' colleagues who was in this courtroom.

4 I will ask you how this argument by the United  
5 States Department of Justice corresponds with the opinions  
6 that you're offering today.

7 "You know why this expansion of MCAS was so  
8 important, the information that the defendant withheld and  
9 tricked and misled Ms. Klein about is important because MCAS  
10 went all the way down to Mach 2 just like he" -- Forkner --  
11 "said in that shocker alert chat. He was down to the  
12 critical phase of flight which is critical for Ms. Klein to  
13 know to conduct her training evaluation -- capable of  
14 influencing," that was one of the elements of the charge in  
15 that case, "it could influence Ms. Klein's decision, but you  
16 have more than that, because Ms. Klein told you when she  
17 testified it would influence Level B. It would create  
18 simulator training. She told that to you when she  
19 testified."

20 How does that argument by United States Department  
21 of Justice in the Mark Forkner case correspond to the  
22 opinion that you're offering here today?

23 A. It lines up fully with my opinion. It doesn't  
24 form the basis for my opinion. It lines up in lockstep with  
25 my opinion.



1 MR. CASSELL: Your Honor, at this time we would  
2 move the admission of Families' Exhibit 14. I will note  
3 that not only is this an admission by the United States of  
4 America, but it's also a statement that a party manifested  
5 an adoption of -- the Justice Department adopted that  
6 statement --

7 THE COURT: I will admit it.

8 (Families' Exhibit 14 was admitted into evidence.)

9 MR. JACOBS: I will just note our objection, your  
10 Honor.

11 MR. HATCH: Yes, we will join.

12 THE COURT: Overruled.

13 MR. CASSELL: Your Honor, just for the record,  
14 too, we -- I believe we have a continuing objection to the  
15 participation of Boeing in this hearing because they lack  
16 standing.

17 THE COURT: Yes.

18 (BY MR. CASSELL:)

19 Q. Now, one more thing about this issue of Level D.  
20 I'm finished with the transcript there.

21 So far, we've looked at Boeing's lies to the  
22 FAA AEG. I want to change the subject slightly to Boeing's  
23 motive for lying to the FAA AEG.

24 Are you aware of any reason why Boeing would want  
25 to conceal the need for flight simulator training from the

1 FAA AEG?

2 A. My understanding is it was strictly financially  
3 motivated. Level-D training is exponentially more costly to  
4 the airlines for two reasons: use of a full-flight  
5 simulator, a multimillion-dollar simulator, that takes  
6 personnel to both run and maintain, as well as when somebody  
7 such as myself is pulled off of my normal flying schedule,  
8 that has a financial impact to the airline as well, due to  
9 my inability to show up and fly my schedule.

10 I also reviewed material in Mr. Forkner's trial  
11 that indicated that there was an awareness on his part that  
12 it was going to cost Boeing millions and millions of dollars  
13 if Level-D training were to be mandated.

14 It was -- the responsibility seemed to fall  
15 squarely upon his shoulders to prevent that from happening.

16 Q. I think you are aware also that three weeks ago  
17 the families had a former FAA official, Christopher Keyes,  
18 testify on this issue about what the FAA AEG would have  
19 done.

20 If I recall correctly, his testimony was that a  
21 Level-D determination would have been required under the  
22 FAA AEG's regulation.

23 Is his testimony consistent with the opinions you  
24 are offering here today?

25 A. It is.

1 Q. So now, just to summarize, the Judge has indicated  
2 a moment ago a question about whether we need to rely on  
3 Stacey Klein to reach the conclusion that the FAA AEG would  
4 have mandated Level-D flight simulator training.

5 So I just want to go down with a series of bullet  
6 points, and maybe you could tell me whether each of these  
7 points supports or contradicts your opinion.

8 Does your specialized knowledge, education,  
9 training, and experience about the training requirements in  
10 the aviation industry support your conclusion?

11 A. Yes, sir, it does.

12 Q. And your actually having undergone pilot training  
13 at the various levels, does that support your conclusion?

14 A. Yes, sir, it does.

15 Q. Does Boeing's financial motivation to lie and  
16 manipulate the FAA AEG to avoid simulator training support  
17 your conclusion?

18 A. It does.

19 Q. Does Boeing ultimately admitting that flight  
20 simulator training was required support your conclusion?

21 A. It does.

22 Q. Does the fact that in 2020, the FAA AEG ultimately  
23 did order flight simulator training support your conclusion?

24 A. Yes, sir, it does.

25 Q. Does the fact that Christopher Keyes reached the

1 same conclusion support your conclusion?

2 A. It lines up and does support my opinion. It's not  
3 foundational for my opinion.

4 Q. Does the fact that the Justice Department  
5 prosecutors in this very trial represented to the Court and  
6 to the jury in the Mark Forkner case that Stacey Klein's  
7 testimony accurately established that she would have ordered  
8 flight simulator training support your conclusion?

9 A. It is supportive of my conclusion, yes. My  
10 opinion, yes.

11 Q. So we have all of those facts, and I guess it  
12 would be the proverbial icing on the cake to say that Stacey  
13 Klein herself has said she would have ordered flight  
14 simulator training?

15 A. Again, I find it supportive of my opinion. A  
16 reminder that I wrote my report and opinions prior to even  
17 reviewing Ms. Klein's testimony.

18 So again, my assertion is that it is supportive of  
19 my opinion and consistent with it, but it's not  
20 foundational.

21 Q. All right. I want to talk now just briefly about  
22 a paragraph in the Statement of Facts. Paragraph 42.

23 This says, "By concealing MCAS's expanded  
24 operational scope from the FAA AEG, Boeing through Boeing  
25 employee one, Mark Forkner, and Boeing employee two, Patrik

1 Gustavsson, defrauded, impaired, obstructed, defeated, and  
2 interfered with the FAA AEG's lawful function to evaluate  
3 MCAS and to include information about MCAS in the 737 MAX  
4 FSB report."

5 Could we talk briefly about what the lawful  
6 function of the FAA AEG is in connection with MCAS?

7 What were they supposed to do with MCAS?

8 MR. HATCH: Your Honor, I will just note for the  
9 record that that does not contain the information that  
10 Mr. Cassell just read, including the names of the  
11 individuals, which I think is important.

12 MR. CASSELL: I'm sorry. Just so the record is  
13 accurate, it says, Boeing employee one and Boeing employee  
14 two. And in my mind, I had included bracketed references,  
15 because I believe in the United States vs. Forkner trial, it  
16 was publicly revealed that Boeing employee one was Mark  
17 Forkner and Boeing employee two was Patrik Gustavsson.

18 THE COURT: Go ahead and answer the question.

19 THE WITNESS: I'm going to have to ask you to  
20 rephrase that, please, or repeat it.

21 (BY MR. CASSELL:)

22 Q. What is the lawful function of the FAA AEG in  
23 connection with MCAS?

24 What is it supposed to do with things like MCAS?

25 A. Yes. Thanks for the clarification.

1 Not just specific to MCAS, but for any system or  
2 component on the aircraft, the AEG's lawful function is to  
3 completely evaluate all facets of that system with regard to  
4 its operating and potential failure modes and make an  
5 assessment as to what level of pilot training is required to  
6 successfully handle the system on the aircraft.

7 Q. And if Boeing obstructed this safety function of  
8 the FAA AEG, what are the foreseeable consequences that  
9 could come from obstructing safety efforts?

10 A. I would say up to and including a catastrophic  
11 fatal accident. There's a range of potential outcomes. The  
12 most severe being a catastrophic fatal occurrence.

13 Q. This may be another obvious point, but if pilots  
14 in a commercial airliner are not properly retrained to  
15 respond to a safety issue, what are the foreseeable  
16 consequences of that lack of training, potentially?

17 A. Essentially, it's the same answer: up to and  
18 including a catastrophic fatal accident.

19 Q. All right. I now want to shift to your second  
20 opinion, which is that foreign carriers follow the FAA.

21 Now, to be clear, you're not a pilot for a foreign  
22 carrier, are you?

23 A. I'm a pilot for a United States domestic carrier.

24 Q. But in the course of your more than three decades  
25 of experience in the commercial aviation industry, have you

1 ever had occasion to interact with foreign carriers and/or  
2 foreign regulators?

3 A. Yes, sir, I have.

4 Q. And what did you observe in the course of your  
5 career about the extent to which foreign regulators and  
6 foreign carriers tend to follow FAA training procedures and  
7 regulations?

8 A. That it is more than a common occurrence. It is  
9 what is expected, based upon my level of industry experience  
10 both as an engineer in DER, working for an airframe  
11 manufacturer, up to and including the work I do here today,  
12 as well as my pilot experience, that foreign carriers follow  
13 what is perceived to be -- the FAA is perceived to be the  
14 world's eminent aviation authority, the gold standard, if  
15 you will, and that foreign carriers follow their lead.

16 Q. I noticed that model you have sitting next to you,  
17 the aircraft we're talking about, that's the Boeing 737  
18 that's at issue in this case?

19 A. It's a Boeing 737 MAX. Yes, sir.

20 Q. An obvious point, that's produced by an American  
21 company?

22 A. Not only produced, but it is developed, designed,  
23 certified, flight-tested, and sold by an American  
24 manufacturer, yes.

25 Q. How does the fact that this is being sold by an

1 American manufacturer relate to your opinion that, in this  
2 case, FAA determinations would have had influence in other  
3 countries?

4 A. Well, I think it just goes in lockstep with the  
5 opinion, right?

6 It's a U.S.-based manufacturer and the United  
7 States regulator, who is essentially the gold standard in  
8 civil aviation around the world. So it's developed and  
9 produced and certified and then approved as airworthy by a  
10 U.S. regulator.

11 So it's somewhat preposterous, in my mind, to  
12 think that a foreign carrier would not follow the  
13 regulations based upon certification of such a  
14 domestic-based aircraft, and in my experience they do.

15 Q. Let's talk about -- you mentioned your experience.  
16 Let's maybe unpack that just a little bit just so the Court  
17 has available the understanding of your basis of knowledge  
18 for your opinion there.

19 I noticed in your CV that you worked at, I think,  
20 an airframe manufacture as a project engineer. Did you  
21 attend conferences with other foreign carriers in connection  
22 with that employment?

23 A. Yes, sir. We hosted such conferences where any  
24 operator of any one of our aircraft could attend and present  
25 concerns or in-service difficulties or try to glean our



1 assistance for things that might be happening or learn from  
2 many things we had learned.

3 They were typically quarterly or occasionally  
4 semiannual-type meetings. And all operators of our aircraft  
5 were invited to attend and typically there was a very large  
6 turnout.

7 Q. And what did you observe about foreign airlines in  
8 connection with them following training recommendations from  
9 the FAA or -- yeah, the FAA?

10 A. My observation is that they were not only inclined  
11 to follow the regulations, but they were eager and really  
12 thirsty for knowledge that we possessed and that perhaps  
13 they didn't and considered it their duty, for the most part,  
14 to learn as much as they could from us, and then follow  
15 whatever advice we had to offer in the form of service  
16 bulletins or recommendations, up to and including what the  
17 FAA would mandate with regard to the aircraft, such as  
18 airworthiness directives and those types of things.

19 Q. Was it your observation that, if the FAA AEG  
20 issued a training directive, that foreign regulators and  
21 foreign carriers were likely to follow suit?

22 A. That is my -- that is consistent with my opinion,  
23 yes.

24 Q. And you mentioned a moment ago a certain eagerness  
25 of foreign regulators and foreign carriers to have a thirst

1 for knowledge.

2 If we limit your observation, not to the universe  
3 of all carriers and all regulators, but to so-called Third  
4 World carriers and Third World regulators, were they more or  
5 less likely to follow FAA AEG guidance?

6 A. I don't believe I have specialized a particular  
7 opinion about, "Third World carriers."

8 Really, in my purview, they all seemed very eager  
9 to just get their hands on as much information as possible  
10 and remain in lockstep with what we were doing here  
11 domestically.

12 Q. And let's talk a moment, I think you said earlier  
13 this morning, right at the beginning of your testimony on  
14 accident reports, that you had reviewed, I think, hundreds  
15 of accident reports.

16 Did any of these accident reports involve foreign  
17 carriers or foreign regulators?

18 A. They did.

19 Q. And did you, in connection with looking at those  
20 particular accident reports, did you observe anything  
21 regarding whether foreign carriers and foreign regulators  
22 tended to follow FAA guidance?

23 A. In terms of specific accidents for foreign  
24 carriers, the typical process is to follow the International  
25 Civil Aviation Organization or ICAO, Annex 13 protocol for

1 accident investigation which, in my experience for any  
2 foreign accident I've ever reviewed, been involved with,  
3 following, that protocol is followed.

4 And it's highly -- all the parties that are  
5 approved to be part of the accident are such, and the  
6 protocol is followed the way it's been established by ICAO  
7 and with the FAA's concert.

8 Q. Now, have you ever personally consulted with  
9 foreign civil aviation authorities?

10 A. In regard to accident investigations?

11 Q. Just in regard to anything in the aviation  
12 industry.

13 A. I have consulted with personnel from Transport  
14 Canada. I've also, not directly corresponded with EASA, the  
15 European Aviation Safety Authority, but have read numerous  
16 accident reports to glean an understanding of their role in  
17 the process and how it may differ from ours.

18 Q. One more interesting thing that I've learned about  
19 in this case, I guess there are certain pilot forums that  
20 are like chat rooms or something like that for pilots around  
21 the world?

22 Are you familiar with pilot forums?

23 A. I don't typically participate, but I am familiar  
24 with them and have read excerpts from some of the more  
25 popular ones, yes.

1 Q. And in observing those pilot forums, have you  
2 observed anything about how pilots in other countries  
3 respond to information coming from, for example, the  
4 FAA AEG?

5 A. My observation is that, I guess the analogy is  
6 similar to, you know, the Internet now being a worldwide  
7 phenomenon. It doesn't limit pilots or carriers from any  
8 foreign entity from participating; the information is  
9 readily available.

10 And what I have observed is that pilots from all  
11 over the world tend to log onto some of these more popular  
12 blogs or forums, if you will, trying to understand  
13 specifically high-visibility incidents and accidents that  
14 they might not be able to gain access to locally.

15 Q. And all those things we've just talked about, from  
16 the pilot forums and your working with foreign civil  
17 aviation authorities, accident reports, and interacting with  
18 foreign carriers, do those help to give you a basis of  
19 knowledge for your opinion that you're offering here today?

20 A. Yes, sir, they do.

21 MR. CASSELL: Your Honor, at this time I'm going  
22 to need to show to our witness Families' Exhibit 5 and  
23 Families' Exhibit 6. Those are two exhibits we previously  
24 entered at the previous hearing.

25 THE COURT: I'm just going to give you all of

1 them. This is what has been admitted at the previous  
2 hearing.

3 THE WITNESS: Understood. Thank you.

4 (BY MR. CASSELL:)

5 Q. We are now looking at what has been marked  
6 Families' Exhibit 6 and admitted into evidence as Families'  
7 Exhibit 6. I think it's just a page or two long.

8 A. I have it, sir.

9 Q. I'm not 100 percent clear I have the right one.  
10 Is the first sentence there, "I want to stress the  
11 importance"?

12 A. Yes, sir, it is.

13 Q. Okay. So just to set the context for the Court.  
14 Families' Exhibit 6 says, "I understand it is an email  
15 between Boeing employees"?

16 A. That appears to be the case, yes.

17 Q. And I want to direct your attention now to the  
18 first three sentences:

19 "I want to stress the importance of holding firm  
20 that there will not be any types of simulator training  
21 required to transition from NG to MAX. Boeing will not  
22 allow that to happen. We will go face-to-face with any  
23 regulator who tries to make that a requirement."

24 Do you see those three sentences there?

25 A. Yes, sir, I do.

1 Q. Based on your understanding of aviation, what is  
2 being discussed among Boeing employees in that particular  
3 email?

4 A. The topic is what type of pilot training, which  
5 level to be clear of pilot training will be required in the  
6 transition from anyone who's already type-rated on a 737NG  
7 in order to be able to go fly the 737 MAX.

8 Q. I notice in the last of those three sentences, it  
9 says, "We," Boeing, "will go face-to-face with any regulator  
10 who tries to make that a requirement."

11 What types of regulators does it appear that  
12 Boeing employees are referencing there?

13 A. On its face it appears that any regulator for any  
14 of Boeing's 737 MAX customers. So if you want examples,  
15 that could -- obviously includes the FAA, and it would  
16 include Transport Canada, the Europeans, the Chinese, et  
17 cetera. Any foreign or domestic regulator who tried to  
18 impose such a requirement is the way I read it.

19 Q. And just -- I think this may support what you've  
20 just testified to. If I look down towards the bottom of  
21 that same page, I see again the Boeing employees saying,  
22 "FAA is pretty powerful and most countries defer to what the  
23 FAA does (except for the national authorities that are stuck  
24 in the Stone Ages, e.g., JCAB and ANAC)."

25 Do you see that sentence there as well?

1 A. Yes, sir, I do.

2 Q. How does that correspond to the opinions that you  
3 are offering here today?

4 A. I think it directly corroborates the opinion I  
5 offered and further substantiates the fact that Boeing  
6 understands the same thing that I alleged to be true.

7 Q. And just for the record, there's a reference here  
8 to Boeing thinking that some regulators are stuck in the  
9 Stone Ages. They refer to JCAB.

10 Do you know what JCAB is a reference to?

11 A. That's the Japanese regulatory authority.

12 Q. And then there's a reference to ANAC or ANAC, I  
13 guess. Do you know what that's a reference to?

14 A. That, to my understanding, is the Brazilian  
15 aviation regulatory authority.

16 Q. All right. Now, I want to turn to another  
17 exhibit. This is the one right in front of that one. This  
18 would be Families' Exhibit 5.

19 A. I have it.

20 Q. And just to set the stage. This is an email to  
21 the apparent Indonesian airline customer from the Boeing  
22 chief technical pilot, is that what this document appears  
23 to be?

24 A. I don't have an indication of who the addressee is  
25 or who it's directed to. Unless I'm missing it.

1 MR. CASSELL: Your Honor, I will reference that  
2 that is the indication from page 34 of the annex to the  
3 House report, that this is an email to an apparent  
4 Indonesian customer from the Boeing chief technical pilot.

5 (BY MR. CASSELL:)

6 Q. I want to ask you now about the material here. It  
7 says, "The FAA, EASA, Transport Canada, China, Malaysia, and  
8 Argentina [sic] authorities have all accepted the CBT [that  
9 is computer-based training] requirement is the only training  
10 needed to begin flying the MAX. I would be happy to share  
11 the operational differences presentation with you to help  
12 you understand that a MAX simulator is both impractical and  
13 unnecessary for your pilots."

14 Assuming that this is an email from Boeing's chief  
15 technical plot to an apparent Indonesian airline customer,  
16 how does this email correspond with the opinions that you  
17 are offering here today?

18 A. It corresponds to the degree that Boeing is, and  
19 Mr. Forkner in particular, is stressing to foreign carriers  
20 who are apparently inquiring about only needing Level B.  
21 Just to be clear, the CBT, computer-based requirement  
22 referenced in this email, does refer to Level-B training.

23 We can discuss that further if there are  
24 questions, but that can be bracketed as reading Level B,  
25 that there's an inquiry from a foreign carrier and it's



1 being addressed by Mr. Forkner and dismissed as trying to  
2 indicate to that carrier that nothing beyond Level-B  
3 training or no full-flight simulator training is required.

4 (BY MR. CASSELL:)

5 Q. When you say Mr. Forkner, as I understand it, he  
6 was acting on behalf of Boeing when he wrote this?

7 A. Yes, sir. My understanding is he was Boeing's 737  
8 chief technical pilot.

9 MR. CASSELL: All right. With the Court's  
10 permission, I would like to approach and provide another  
11 exhibit marked as Families' Exhibit 15.

12 (Families' Exhibit 15 was marked for identification.)

13 MR. CASSELL: Copies have been provided to  
14 opposing counsel.

15 (BY MR. CASSELL:)

16 Q. And this is an email to/from Boeing employees on  
17 August 18, 2016. Is that what this appears to be?

18 A. Yes, sir.

19 Q. And I want to direct your attention to the second  
20 paragraph in this particular email. This says, EASA. I  
21 think there's some airline or aviation lingo I should know.

22 How is EASA typically pronounced in the aviation  
23 industry?

24 A. I've heard it pronounced multiple ways. I  
25 prefer -- I just typically call it EASA myself is how I

1 generally hear it pronounced.

2 Q. What is EASA? Just so that we're clear.

3 A. It's the European Union Aviation Safety  
4 Authority [sic], I believe. It's the European regulator.

5 Q. Okay. So this email says, "EASA has accepted the  
6 FAA/TCCA's finding. So the EASA requirement will be the  
7 same as written into their OSD report. The CAAC has already  
8 said they will accept the FAA findings."

9 Just so the record is clear, now, who is the CAAC?

10 A. I believe that's the Chinese authority. However,  
11 I'm not 100 percent sure. I don't have all of these  
12 memorized, but I believe that's China.

13 Q. All right. And it says, the email continues, "We  
14 will probably have to go to other regulators around the  
15 world to Jedi mind-trick them into accepting the FSB  
16 findings, but that shouldn't be hard."

17 Do you see that as well?

18 A. I do.

19 Q. Given your background and training experience,  
20 what is being discussed here by Boeing employees in  
21 connection with the FAA finding that they had managed to  
22 secure?

23 A. Again, it appears to be a discussion about the  
24 level of pilot training required for transition from the NG  
25 into the 737 MAX. It's discussing specifically the level of

1 pilot training required.

2 MR. CASSELL: Your Honor, at this time, I would  
3 move into evidence Families' Exhibit 15.

4 THE COURT: That will be admitted.

5 MR. HATCH: Object for the record.

6 (Families' Exhibit 15 was admitted into evidence.)

7 (BY MR. CASSELL:)

8 Q. We've been talking generally about Jedi  
9 mind-tricks and other things like that. I want to focus in  
10 specifically now to two crashes.

11 I think you are familiar with the Indonesian Lion  
12 Air Flight 610, crash that's of interest in this proceeding.

13 According to the Statement of Facts, on  
14 October 29, 2018, Lion Air Flight 610, crashed, killing all  
15 189 passengers and crew onboard.

16 Is that your understanding of the fate that that  
17 flight suffered?

18 A. Yes, sir, it is.

19 Q. And after that crash, my understanding is that the  
20 Indonesian authorities pursued an investigation into that  
21 crash?

22 A. That's my understanding as well.

23 Q. And I believe the Court has already received into  
24 evidence Families' Exhibit 2, which is several hundred pages  
25 long. It's the Indonesian accident report. I have just a

1 couple of questions. I think you may not need to spend too  
2 much time on this.

3 But I think, just generally, we've established, in  
4 your opinion, that that's a trustworthy accident  
5 investigation report?

6 A. It appears to be, yes.

7 Q. And did the Indonesian authorities find it  
8 noteworthy that there was no information in the flight  
9 manual on Flight 610 regarding MCAS?

10 A. They so stated that in their report.

11 Q. Did the Indonesian authorities find it noteworthy  
12 that those pilots had not received any training whatsoever  
13 on improper MCAS activation?

14 A. Yes, they did.

15 Q. All right. Now, I want to direct your attention  
16 to a couple of things that are found in Families' Exhibit 4,  
17 that's the House report. I think this might be an occasion  
18 for pulling up the House report, Families' Exhibit 4.

19 A. I have it.

20 Q. If we could flip to page 156 of the House report  
21 on the Boeing 737 MAX.

22 I notice on page 156 there are three bullet  
23 points, if you're on the same page as I am?

24 A. I am.

25 Q. So I want to direct your attention to the bottom

1 of those three bullet points. And again, maybe the simplest  
2 thing is for me to just read some information here.

3 This is the bullet point finding from the House  
4 Committee Report. "In a separate instant message exchange  
5 with a Boeing colleague also on June 2017, Mr. Forkner  
6 wrote, 'Now friggin' Lion Air might need a sim to fly the  
7 MAX and maybe because of their own stupidity. I'm  
8 scrambling to figure out how to unscrew this now! Idiots.'"

9 Do you see that passage there?

10 A. I do.

11 Q. And given what we've just learned about what the  
12 accident report from the Indonesian authorities said, does  
13 it appear that Mr. Forkner was able to, as he put it,  
14 "Unscrew" the efforts of Lion Air to obtain flight simulator  
15 training?

16 A. Well, what is apparent, in concert with my  
17 understanding, is that no airline -- that everyone went  
18 along with the recommendation that only Level-B training was  
19 required.

20 So if you're asking specifically about Lion Air,  
21 that holds true to them as well to my understanding.

22 Q. And let's also look at another point on this page  
23 from the House report. The same page, 156. But up  
24 toward -- up at the top, the House Committee found, "In  
25 particular, emails from Mr. Forkner concerning the company's

1 foreign airline customers shows strong opposition to  
2 simulator training and grossly inappropriate language in  
3 reacting to airlines that even inquired about simulator  
4 training needs for their MAX pilots."

5 Do you see that finding from the House?

6 A. I do.

7 Q. How does that correspond with the opinions you've  
8 offered here today?

9 A. It's supportive of my opinion.

10 Q. Thank you. You can set that to the side now. I  
11 have just a couple of other questions. Actually, let's see.  
12 I want to turn now to the Ethiopian Airline crash.

13 Is it your understanding that on March 10, 2019,  
14 Ethiopian Airlines Flight 302, a Boeing 737 MAX, crashed six  
15 minutes after takeoff, killing all 157 passengers and crew  
16 onboard?

17 A. Yes, it is.

18 Q. As with the other aircraft, was there an  
19 appropriate investigation of that crash by the Ethiopian  
20 authorities?

21 A. Yes, there was.

22 Q. And would that information appear to be  
23 trustworthy to you?

24 A. It does.

25 Q. Did the Ethiopian authorities find it noteworthy

1 in their investigation that Ethiopian Airlines Flight 302,  
2 did not have any training materials about improper MCAS  
3 activation?

4 A. They did find that noteworthy, yes.

5 Q. And did the Ethiopian authorities also find it  
6 noteworthy that there was no training requirement for the  
7 pilots on Ethiopian Airlines 302 in connection with improper  
8 MCAS activation?

9 A. Yes, they did.

10 Q. And since we're talking about Ethiopian Airlines,  
11 I think it's interesting, are you familiar with a finding in  
12 the House report that, if we go back, I guess this would be  
13 four or five years, to 2014, as part of a marketing  
14 maneuver, was Boeing presenting to Ethiopian Airlines the  
15 idea that they wouldn't have to provide specialized training  
16 to their pilots when they transitioned to the 737 MAX?

17 A. My understanding is that the 2014 presentation  
18 specifically told Ethiopia that no training beyond Level B  
19 would be required.

20 MR. CASSELL: And your Honor, for the record, you  
21 can find that reference at page 139 of the House report.

22 (BY MR. CASSELL:)

23 Q. Now I want to ask you a separate question. I want  
24 you to assume, and I believe this is an admitted fact, that  
25 for more than two years, Boeing conspired to interfere with

1 and obstruct the FAA AEG by concealing the expansion of the  
2 MCAS system into low-speed operations.

3 Are you with me so far? That there's this  
4 two-year conspiracy to conceal that?

5 A. I'm with you.

6 Q. I want you to assume that, after having run this  
7 two-year conspiracy, Boeing started to run around and tell  
8 Indonesian authorities and Ethiopian authorities and EASA  
9 all about MCAS.

10 Would that have defeated the very purpose of the  
11 conspiracy?

12 A. The notion that Boeing had told these other  
13 foreign regulators about the expansion of the MCAS, if I  
14 understand your question, is that it?

15 Q. Yes.

16 A. Yes, that would have defeated the purpose of the  
17 conspiracy.

18 Q. And based on your training and experience with the  
19 interactions between American regulators and foreign  
20 regulators, would that information have quickly filtered  
21 back to the authorities -- appropriate authorities in the  
22 FAA?

23 A. Virtually immediately, I would think.

24 Q. And the opinions you've just been offering about  
25 this interconnectedness between American regulators and



1 foreign regulators, is that consistent with the testimony  
2 from families' expert Christopher Keyes offered three weeks  
3 ago?

4 A. It is.

5 Q. All right. I now want to turn to your third  
6 opinion. And again, just to set the stage for the third  
7 opinion, I understand that to be to a reasonable degree of  
8 professional certainty and industry experience, had the  
9 pilots of Lion Air Flight 610, and Ethiopian Airlines Flight  
10 302, undergone comprehensive Level-D simulator training,  
11 neither of these accidents would have occurred and thus the  
12 lives of 346 people would have been saved; is that your  
13 opinion there?

14 A. That is my very strong opinion, yes.

15 Q. Okay. So you mention it's a strong opinion. I  
16 think it would be useful for the Court to understand what is  
17 the basis of knowledge that allows you to give an opinion  
18 like that.

19 Let me just review quickly. Have you been  
20 involved in accident investigations before?

21 A. I have.

22 Q. And have you reviewed accident reports in the  
23 past?

24 A. I have.

25 Q. And I notice, I guess I'm recapitulating some of

1 this, but just maybe it would be noting for the record, the  
2 Indonesian report is 320 pages long.

3 Is that the accident report? Does that sound  
4 about right to you?

5 A. Roughly. I know it's quite long. It's right  
6 here, if you would like me to corroborate it, but that  
7 sounds about right.

8 Q. And then there's also the Ethiopian Interim  
9 Accident Report which, again, is extensive?

10 A. Yes.

11 Q. And these reports would give an expert like you  
12 information about, for example, what is it, the black boxes  
13 that are sometimes recovered from crashes and that sort of  
14 thing?

15 A. That's a piece of the information. I mean, we  
16 talk about them being black boxes. Typically, there are  
17 two: the cockpit voice recorder is one of the boxes, it's  
18 actually orange, and the digital flight data recorders. So  
19 it's somewhat of a package deal when we talk about the black  
20 boxes.

21 Q. Maybe one way to get at it. Do those two accident  
22 reports give you, as an aviation expert, a pretty good  
23 picture of what happened to those two flights as they  
24 crashed and killed 346 people?

25 A. Yes, they did.

1 Q. And again, how long have you been a commercial air  
2 pilot?

3 A. Oh, my goodness.

4 Q. Approximately. Decades?

5 A. Decades.

6 Q. All right. So now, just kind of setting the stage  
7 for your opinions, I want to dive into -- you've given an  
8 expert opinion about two crashes. I want to take them  
9 individually because they are two crashes with different  
10 individuals involved.

11 So I want to direct your attention first to Lion  
12 Air Flight 610, which crashed and killed 189 passengers and  
13 crew.

14 That was investigated by the Indonesian  
15 authorities?

16 A. Yes, sir, it was.

17 Q. And did the Indonesian authorities determine that  
18 MCAS played a pivotal role in that crash?

19 A. They did make that determination, yes.

20 Q. And this will be kind of an open-ended question.  
21 I think you can then help the Court understand, and the rest  
22 of us understand, what role did MCAS play in the crash of  
23 flight -- Lion Air Flight 610?

24 That's kind of an open-ended question. I don't  
25 know how --

1           A.     Yeah, it's a broad question. But essentially, the  
2     overview is that MCAS erroneously activated numerous times,  
3     I believe 20 times in the case of Lion Air 610, by pushing  
4     the nose of the aircraft down. However, that wasn't the  
5     only thing that the pilots were contending with.

6                 Due to the erroneous angle of attack sensor, there  
7     were numerous warnings, indications, audible warnings, stick  
8     shaker, we call the column that we control the aircraft  
9     with.

10                The control column that has the steering yoke on  
11    it, it has something called a stick shaker, which warns a  
12    pilot of an impending stall condition when the angle of  
13    attack is excessive. That was going off as well.

14                So there was a virtual cacophony of indications  
15    and effects going off while MCAS was simultaneously  
16    firing --

17           Q.     If I could just stop you there for a moment. That  
18    was an interesting phrase, cacophony of effects. I think  
19    that's the same thing that the House report described based  
20    on their review of the accident as well.

21           A.     I can't attest that they used that word. I will  
22    take your word for it, but that is indeed what was  
23    happening.

24           Q.     So I'm not a commercial air pilot. So let me just  
25    maybe stop you right there. You were describing a number of

1 different things going on.

2 Let's assume that you are the pilot of that  
3 aircraft and MCAS, I think you said, fires.

4 What's the pilot facing the first time MCAS fires  
5 or activates?

6 Can you help me understand what that would be like  
7 in the cockpit?

8 A. Yeah, while you're attempting to just maintain a  
9 reasonable, and what I call normal climb attitude, leaving  
10 the ground and climbing up to altitude, the MCAS firing or  
11 activating is pushing the nose of the aircraft over when the  
12 pilot didn't command such a maneuver.

13 The pilot is obviously going to respond  
14 intuitively, in what he or she hopes is appropriately, pull  
15 back on the column, try to arrest that dive.

16 But moreover, the pilot has no awareness of why  
17 this is happening or what the actual failure is, because the  
18 fact of the matter is they don't even know that the MCAS  
19 system was on their airplane to begin with, nor do they have  
20 a sense of how to respond to any of its failure modes.

21 So they don't know, they don't have an idea of  
22 what is happening and suddenly -- I mean, these pilots were  
23 in the fight of their life trying to stop this airplane from  
24 crashing.

25 And repetitive MCAS inputs continued to occur, and

1 they had no training on why that might be or how to  
2 successfully counteract the effects of MCAS -- erroneous  
3 MCAS activation and safely fly the airplane out of that  
4 condition.

5 Q. You mentioned this cacophony of different things  
6 going on. Maybe we can break it down into some of the  
7 different senses.

8 Let's talk about tactile. What would the pilots  
9 be feeling when MCAS is firing and then firing again?

10 Would there be any sensory things that would be  
11 happening for the pilots?

12 A. When MCAS is firing as a result of a faulty angle  
13 of attack indicator which was, in fact, the case here, just  
14 by the AOA or angle of attack failure, there are going to be  
15 numerous warnings and visual things that don't make sense,  
16 comport to the pilots.

17 The airspeed indication will be erroneous. And  
18 when -- if I were to look over at my copilot's side of the  
19 airplane and what's your airspeed? What's your altitude?  
20 They are not matching up.

21 We have a digital readout of, we call it a speed  
22 tape, including the lower airspeeds and the upper airspeeds,  
23 and those speed tapes turn red and converge. So you have no  
24 safe operating airspeed to look at.

25 It's just an extremely confusing and immediate set

1 of circumstances to try and find an immediate solution to  
2 where time is of the absolute essence.

3           Meanwhile, as I said, the stick shaker is going  
4 off. And let me tell you, in the simulator we practice it,  
5 it is so loud that the clacker associated with it, not only  
6 is your column shaking while you're trying to fly this  
7 aircraft, but it is so loud that it almost prohibits  
8 conversation between yourself and the copilot.

9           And while all that is going on, the aircraft keeps  
10 trying to put you into a dive toward the ground. A  
11 situation that you have, again, no idea why that could be  
12 happening and no training to fall back on to try and  
13 counteract it.

14           Q. Now, you mentioned there would be a very limited  
15 amount of time for the pilots to recover the aircraft and  
16 respond to that.

17           Could you give us just a rough estimate of how  
18 long they have to respond to MCAS firing?

19           A. Well, that's a complicated question. Obviously,  
20 the more critical -- the closer you are to the ground, the  
21 more critical the event.

22           When MCAS fires repetitively, what these pilots  
23 saw was that every time they tried to counteract that  
24 nose-down situation, if they didn't get -- return the  
25 aircraft to straight and level flight and trim out the --

1 meaning, alleviate the associated control forces. The next  
2 level set for the airplane, if you will, was not level  
3 flight but it was slightly lower.

4 Same thing would happen the next time. Now the  
5 aircraft was further nose down. Twenty times this happened  
6 to these pilots. And ultimately, the control forces were  
7 such that they couldn't trim them out.

8 So time to respond to a single event, a repetitive  
9 event, when you're trained and you understand what is  
10 happening, is still of the essence, but it opens up all the  
11 time in the world. These pilots had no time, because they  
12 had no understanding and no training.

13 Q. Well, let's turn to that. Actually we've talked  
14 about it. Just one small point. I think you were  
15 mentioning what was going on in the cockpit.

16 Are there any visual alerts that are coming along  
17 that might be distracting to pilots in that life-or-death  
18 struggle?

19 A. Numerous visual alerts.

20 Q. Could you tell us just a little bit -- I mean,  
21 you've been a pilot. Can you tell us a little about what is  
22 that?

23 Why don't they just push the button that says,  
24 "Turn off MCAS"? Can you help us understand?

25 A. There's no such animal to answer that question.



1 In addition to the warnings I've described, visual alerts  
2 would say, "Altitude disagree, airspeed disagree, feel  
3 differential pressure," which is a -- it's a complicated  
4 system, but basically, as a result of the angle of attack  
5 sensor failing, one side or the other, in comparison to  
6 hydraulic pressure, it's sensing that there are different  
7 pressures.

8 Those would just be some of the lights and alerts  
9 that would be going on. The 737 has a master caution panel  
10 on each side of the pilots. There's one for the captain,  
11 one for the first officer.

12 And they're repeater lights, if you will, to draw  
13 your attention to things on the overhead panel you might not  
14 normally -- they might not be in your normal field of  
15 vision.

16 Those would be illuminated with multiple alerts  
17 because of everything going on. So sorting out in the  
18 proper order, the cacophony of things going on would be a  
19 completely overwhelming task while the airplane is trying to  
20 drive you into the ground at the same time.

21 Q. Now, you were mentioning training that could have  
22 been provided. It sounds like, in fact, you have had  
23 training on improper MCAS activation.

24 Could you help us understand how things could have  
25 been different for the passengers and crew on that flight if

1 they had been trained to respond to improper MCAS  
2 activation?

3 A. As I've been trained now, and as every pilot  
4 certified to fly the 737 MAX, these pilots would have  
5 been -- first off, they would have been provided the  
6 information in their manuals so that they would understand  
7 that the system was onboard their aircraft and what it was  
8 intended to do.

9 They would also then have received information  
10 about potential failure modes and what the likelihood of  
11 that happening and how to immediately recognize and respond  
12 to such an event.

13 I mean, in layperson's terms, there would be an  
14 aha moment as soon as the nose pitched over and it wasn't  
15 commanded by either of the pilots. I mean, their immediate  
16 thought would be, I wonder if this is an uncommanded MCAS  
17 event?

18 It certainly looks and feels like everything I was  
19 trained to. And if it is, I know what to do. I'm going to  
20 use my electric trim switches. I'm going to trim out all  
21 those control forces that are driving the nose down.

22 I'm going to return the airplane to level flight.  
23 Let go, if you will, make sure all those forces are off, and  
24 then I'm going to activate the stabilizer trim cutout  
25 switches and take MCAS out of the equation so that it stops

1 pushing my nose down.

2 I'm going to return to level flight and manually  
3 trim the control wheel for the duration of flight and put  
4 the aircraft on the ground safely.

5 Both of these aircraft were perfectly capable of  
6 sustained safe flight, save for the single failure of the  
7 MCAS.

8 Q. So you're here today as an expert witness. I want  
9 to present you with a hypothetical set of facts and get your  
10 expert opinion.

11 For purposes of this question, I want you to  
12 assume that Boeing was a law-abiding corporation and did not  
13 engage in a conspiracy to defraud the FAA about the new MCAS  
14 system and its expanded operational scope. Instead, Boeing  
15 complied with its obligations and disclosed that expanded  
16 operational scope to the FAA AEG.

17 Based on your specialized knowledge, training,  
18 experience, and education, how would that world have been a  
19 different world?

20 A. It's the world we're living in, as I sit here,  
21 right?

22 Every pilot currently qualified to fly the 737 MAX  
23 is aware of the system on the aircraft, its purpose and  
24 limitation, and has been trained to counteract --  
25 immediately recognize and counteract any erroneous

1 activation of the system. It's the world we sit here in  
2 today.

3 Q. And with regard to the lives of 189 passengers and  
4 crew on Flight 610, how would the world have been different?

5 A. I believe they'd be with us today for the reasons  
6 I just explained.

7 Q. Another way of I guess getting at your opinion,  
8 would it fair to say that Boeing's crime of defrauding the  
9 FAA AEG about the expansion of MCAS operating capabilities  
10 was an ultimate but-for cause of the Lion Air crash?

11 A. Yes, I agree with that.

12 It robbed the entire aviation community of the  
13 opportunity to accurately assess MCAS's potential  
14 catastrophic effects and for the FAA AEG to properly  
15 evaluate those and subsequently provide information and  
16 training to those of us expected to go fly this aircraft  
17 safely.

18 Q. And the opinion you've just offered, I think the  
19 Indonesian authorities also looked at these questions.

20 Is it fair to say that the Indonesian authorities  
21 found that flight crew training would have supported the  
22 recognition of abnormal situations and appropriate flight  
23 crew action?

24 Is that your understanding of what the Indonesians  
25 concluded?

1           A.     It is.

2           Q.     This, I guess, is one other last point about the  
3     Lion Air flight and something that I think I've seen  
4     referenced in some of the documents.

5                     Are you aware of something called a startle  
6     effect?   When someone is startled?

7           A.     I am aware of startle effect.   In my research and  
8     experience in aviation safety, I understand what startle  
9     effect is as it relies -- I'm sorry, as it applies to  
10    aviation.

11          Q.     How would the startle effect have factored into  
12    the crash of Lion Air 610?

13          A.     Well, my opinion is the startle effect would have  
14    been significant on these pilots who were expecting the  
15    normal operation and takeoff, climb-out, normal operation  
16    with no warnings, no alerts, and certainly no gremlin of a  
17    system in the background taking control of their flight  
18    controls.

19                     And I imagine the startle effect, a combination of  
20    all of those things, would have been significant.   It was  
21    certainly nothing they were expecting.

22                     As I sit here today, I don't expect it either, but  
23    I know that my startle effect would be much less pronounced  
24    and much less prolonged because of training, because I have  
25    been repetitively trained and been put through various

1 scenarios that these pilots didn't have the advantage of  
2 seeing.

3 Q. And just so the record is clear, a startle effect  
4 means what to you, in general?

5 A. Something happened completely out of the ordinary  
6 to upset my prior expectation bias that I'm going to have a  
7 normal rotation, climb-out, safe and uneventful climb to  
8 cruise altitude. I am startled or surprised would be the  
9 best synonym I have by the aircraft not behaving in a manner  
10 I expected it to and have watched it do thousands of times.

11 THE COURT: Are you almost done?

12 MR. CASSELL: I would estimate that I have another  
13 30 minutes of questions.

14 THE COURT: Okay. On what issue? I think it's  
15 getting repetitive at this point.

16 MR. CASSELL: I'm going to ask questions about the  
17 interim period between the two crashes, and then I was going  
18 to talk about the Ethiopian crash, and then I was going to  
19 talk about with the witness risk factors associated with  
20 Boeing's conspiracy.

21 THE COURT: Okay. I think those are all  
22 repetitive. We are going to take our morning break, a  
23 20-minute break. I've got to take up this other hearing.

24 MR. CASSELL: Okay.

25 (The proceedings adjourned at 10:07 a.m.)

1 (The proceedings reconvened at 10:32 a.m.)

2 THE COURT: Okay. Anything else that we have not  
3 already covered?

4 MR. CASSELL: No, your Honor. Other than just to  
5 note for the record that we object to not having a chance to  
6 finish.

7 THE COURT: What issue, and what is it not  
8 repetitive of?

9 MR. CASSELL: With regard to the interim period,  
10 we would show that Boeing's conspiracy continued through the  
11 post-Lion Air, pre-Ethiopian crash period.

12 THE COURT: Okay.

13 MR. CASSELL: It would then establish with  
14 respect --

15 THE COURT: Is there any dispute over that?

16 I mean, doesn't -- don't the stipulation of facts  
17 outline this?

18 MR. CASSELL: Last time, both the government and  
19 Boeing asked a number of questions that I thought were  
20 designed to dispute that point, but if they want to  
21 stipulate?

22 THE COURT: Well, the stipulation will speak for  
23 itself.

24 MR. CASSELL: Yes.

25 THE COURT: Okay. So the interim period between

1 the two crashes?

2 MR. CASSELL: We had just finished talking about  
3 the Indonesian crash. The witness, I would proffer, was  
4 going to describe the same sorts of things occurring on a  
5 separate crash, ET 302.

6 THE COURT: You mean the cacophony of events?

7 MR. CASSELL: The cacophony of MCAS.

8 THE COURT: And the MCAS and lack of training and  
9 its effect?

10 MR. CASSELL: Yes.

11 THE COURT: Your testimony is basically the same  
12 on both crashes?

13 THE WITNESS: Yes, your Honor. Shorter duration,  
14 but the lack of training would have prevented [sic] the  
15 crash.

16 THE COURT: Didn't prepare these pilots to  
17 understand what was happening which prohibited them from --

18 THE WITNESS: Responding.

19 THE COURT: -- training and disabling,  
20 overriding --

21 THE WITNESS: Responding appropriately.

22 THE COURT: Responding appropriately. Okay.

23 THE WITNESS: Yes, your Honor.

24 MR. CASSELL: The last topic would be I was going  
25 to establish that the Boeing conspiracy enhanced risk to the



1 passengers and crew on both flights.

2 THE COURT: Okay. So that's different from this  
3 other expert you want to call?

4 MR. CASSELL: Correct.

5 THE COURT: How is this different?

6 MR. CASSELL: We're hoping to be able to cover  
7 that through Ms. Norton.

8 THE COURT: Okay. And not call the other witness?

9 MR. CASSELL: Potentially.

10 THE COURT: Okay. Go ahead, then, because I have  
11 a criminal docket starting at two.

12 MR. CASSELL: I'm sorry?

13 THE COURT: I have a criminal docket that starts  
14 at two.

15 MR. CASSELL: Yeah, so --

16 THE COURT: I moved everything to two, but it's  
17 going to take me -- that docket is going to take me an hour,  
18 hour and a half.

19 MR. CASSELL: Thank you.

20 THE COURT: So we will have to break.

21 MR. CASSELL: I would estimate the risk questions  
22 will take approximately five minutes.

23 THE COURT: Yeah. No, I thought you were calling  
24 another witness as well?

25 MR. CASSELL: I believe -- if I could confer?

1 Yeah, I think it's unlikely that we would be calling  
2 Dr. Storesund.

3 THE COURT: Go ahead. If you think that my  
4 understanding of what he would say about the time period  
5 between the two flights and my understanding of her  
6 testimony, that the pilots' reaction from the flight you've  
7 already gone through would be different, go ahead and cover  
8 those again. I think I understand that.

9 But with that understanding, then go ahead.

10 MR. CASSELL: Perhaps with regard to the interim  
11 period, I think it's Boeing and the government that might  
12 have questions in that area. If I could just have some  
13 latitude on redirect, I think that would take care of that.

14 THE COURT: Very good.

15 MR. CASSELL: So five minutes on risk.

16 BY MR. CASSELL:

17 Q. So far we've been talking about but-for causation.  
18 I now want to explore a slightly different topic.

19 Did Boeing's conspiracy create a risk to the  
20 passengers and crew on those two flights?

21 A. It's my opinion that it created an exponential  
22 risk.

23 Q. And for purposes of this question, I want to take  
24 you to a particular time and particular place.

25 Specifically, I want you to consider the situation at

1 approximately 6:20 a.m. local time on October 29th, 2018,  
2 just after Lion Air, Flight 610, had taken off from Jakarta.

3 Based on your specialized knowledge, training, and  
4 education, did Boeing's conspiracy crime create any risks to  
5 the 189 passengers and crew on the flight at that time?

6 A. It created the very real risk that ultimately did  
7 materialize: that MCAS would fire, not in the outer, upper  
8 operating envelope as it was advertised, but that it could  
9 fire virtually immediately after takeoff, in the moments  
10 after takeoff in very close proximity to the ground, which  
11 is, in fact, exactly what happened.

12 Q. And I guess the risk would be that they had  
13 not been trained at all to deal with what they were  
14 encountering?

15 A. Well, the risk now becomes amplified, really,  
16 asymptotically because, not only had they not been trained  
17 as we already covered, but now this is happening so close to  
18 the ground in proximity to terrain, as well as, you know,  
19 with everything else that they were facing, that their  
20 allotted time to be able to act appropriately, even had they  
21 known how, was greatly reduced, which proportionately  
22 increases the risk.

23 Q. And similarly, if I take you to another place and  
24 time, approximately 8:38 local time on March 10, 2018, just  
25 after Ethiopian Airlines, Flight 302, had taken off, were

1 the same sort of risks created by Boeing's conspiracy?

2 A. Yes, sir, they were.

3 Q. And we've talked a lot about the crashes. We just  
4 talked about risk. This is my last set of questions here.

5 Would the passengers and crew on both of those  
6 flights have sensed that they were in danger before the  
7 actual crashes occurred?

8 A. Could we differentiate crew from pilots to flight  
9 attendants?

10 Q. Yes.

11 A. Certainly, the pilots. I think we've covered that  
12 adequately for the Court's understanding.

13 Passengers and flight attendants in the back --  
14 flight attendants would be the next level of trained  
15 awareness or, you know, viscerally they would know that the  
16 aircraft oscillating the way it was was not a normal  
17 climb-out, the power surges.

18 They may have also -- certainly the first-class  
19 passengers would have heard the oral alerts and possibly  
20 even the pilots shouting commands to one another. Those are  
21 very potentially audible through the door.

22 I think any seasoned flier who had flown at least  
23 once would recognize that the oscillations the aircraft --  
24 both aircraft were going through is not normal and not  
25 representative of what would be expected. So I would think

1 that there would be an awareness of virtually everyone  
2 on board, yes.

3 Q. And then as things progressed, would it have been  
4 a terrifying experience for all involved, even if the planes  
5 had not crashed?

6 A. I believe it would have been most terrifying. I  
7 would have been terrified.

8 Q. So they would have been harmed, regardless of  
9 whether the crashes ultimately killed them?

10 A. It certainly would have been a traumatic -- even  
11 had the pilots been able to save either or both aircraft, I  
12 think it would have been an extremely traumatic experience  
13 to everybody on board to varying degrees.

14 MR. CASSELL: Thank you for your testimony,  
15 Captain Norton.

16 THE WITNESS: Thank you.

17 CROSS-EXAMINATION

18 BY MR. JACOBS:

19 Q. Morning, Captain Norton.

20 A. Morning.

21 Q. Captain Norton, you are getting paid for your  
22 opinions in this case, correct?

23 A. I'm sorry, say that again.

24 Q. You're getting paid for your opinion in this case,  
25 correct?

1 A. My company, MAE Forensic, is getting paid.

2 Q. You're billing out at \$475 per hour, correct?

3 A. That is correct.

4 Q. And approximately how many hours have you worked  
5 on this case?

6 A. I didn't come prepared to answer that, sir, but my  
7 best guess would be in the 20- to 25-hour range.

8 Q. Have you previously testified in litigation where  
9 you represented someone or worked for someone who's been  
10 opposite of The Boeing Company?

11 A. Opposite of The Boeing Company? Yes, I have.

12 Is the question better phrased as, have I ever  
13 represented, testified on behalf of The Boeing Company?

14 Q. Have you ever testified opposite of The Boeing  
15 Company?

16 THE COURT: Against Boeing.

17 THE WITNESS: Against Boeing. Other than this?

18 Honestly, sir, I would have to refer to my notes, to my  
19 background. I can't -- I know I have testified on their  
20 behalf but --

21 BY MR. JACOBS:

22 Q. Now, in your report, Captain Norton, it's your  
23 opinion in Section 4.1, this is Movant's Exhibit 11, on page  
24 six, and it's your opinion, looking at the top of that page,  
25 that the omission of any and all substantive references to

1 MCAS in the 737 MAX aircraft flight manual and pilot  
2 training materials was an ultimate but-for cause of the  
3 crashes of Lion Air, Flight 610, and Ethiopian Airlines,  
4 Flight 302, right?

5 A. That's correct.

6 Q. And that's what you've testified to here today,  
7 correct?

8 A. I believe so.

9 Q. Now, your report, just a few paragraphs down it  
10 actually goes a little bit further, and this is the fourth  
11 paragraph on page six, where it says, "The intentional  
12 omission/lack of disclosure regarding MCAS coupled with  
13 false, misleading, and wholly inaccurate descriptions of  
14 MCAS's ultimate control authority and capabilities upon  
15 certification of the MAX was directly causal to the crashes  
16 of each of those flights," correct?

17 A. That is what that says, yes.

18 Q. And so, when you're talking about the ultimate  
19 control authority of MCAS, what do you mean by that?

20 A. As I previously testified to, MCAS is, as  
21 originally designed, I tend to refer to the variation of  
22 MCAS as MCAS 1.0 or -- just to be clear for the Court, that  
23 is the MCAS that was intended and the FAA AEG understood to  
24 be present on board 737 MAXes had all three of the required  
25 components I testified to earlier.

1 MCAS that actually found its way onto the  
2 aircraft, the expanded version as we've been referring to  
3 it, or as I refer to it as MCAS 2.0, was the MCAS I'm  
4 referring to in my report.

5 Again, to reiterate, the speed parameter was  
6 expanded and not disclosed. The load factor, the 1.3 G load  
7 factor that was a previous requirement was removed in its  
8 entirety, leaving the aircraft susceptible to a single angle  
9 of attack erroneous sensor -- erroneous AOA sensor, allowing  
10 MCAS to -- now to get to the meat of your question -- to  
11 affect its effect on the flight control service and drive  
12 the nose of the aircraft down.

13 Q. So part of that ultimate control authority, it  
14 sounds like it includes the vulnerability of the single AOA  
15 sensor, correct?

16 A. Ultimately, that's where we ended up in MCAS 2.0,  
17 if you will, because of the removal of the other two  
18 requirements, which would have been necessary, and as  
19 certified, would have ensured that MCAS wouldn't fire but  
20 for being in the small, very rare corner of the flight  
21 envelope that no revenue passenger-carrying flight should  
22 ever experience. So, yes.

23 Q. And there are some other items that you list, and  
24 we will go through them a little bit later, but this  
25 ultimate control authority would also include the ability of



1 MCAS to, I think your words are, resync or ratchet?

2 A. Yeah, I don't -- those are all true. I think that  
3 for the Court's understanding, my ability to explain it so  
4 that people would understand it, ratcheting or -- the MCAS  
5 does, in fact, resync, which was also something the  
6 pilots -- the pilots weren't aware that the system was on  
7 the airplane.

8 So they wouldn't be aware that five seconds after  
9 they effected the electric control wheel switches, when the  
10 nose first started to dive down, to push over, and they  
11 didn't know why, the instinct is to trigger the electric  
12 control wheel switches which, in fact, did cut MCAS out.

13 In addition to knowing nothing else, they also  
14 didn't know that, once they released those switches, MCAS  
15 would activate or resync, if you will, five seconds later.

16 So there's sort of two separate things, if you  
17 will, sir. So the ratcheting effect, first, nose down. You  
18 stop the trim but you don't get all the way back to level.  
19 It was enough for you to counter what was going on and then  
20 try to figure out what was going on.

21 When it repeatedly happens, so then you get back  
22 to perhaps not quite a level attitude. Five seconds later,  
23 it happens again, the nose goes over again. Pilots effect  
24 the electric trim switches, pick the nose up.

25 And now you can see, we're not here or here,

1 ground zero now is pointed, a negative attitude. It  
2 happened to Lion Air 610 twenty times, which is how they  
3 ended up like this (indicating).

4 So there's a difference between the resync  
5 feature, which is the five seconds after the electric trim  
6 switches are effected, and the ratcheting, as it's been  
7 described, and I hope that clears that up.

8 Q. Thank you.

9 Captain Norton, have you read the Deferred  
10 Prosecution Agreement that was filed in this case?

11 A. I have.

12 Q. How many times have you read it?

13 A. I don't know, sir. Numerous.

14 Q. When was the last time that you read it?

15 A. Yesterday.

16 Q. Did you read the criminal information that was  
17 filed in this case?

18 A. Unless it was part of what I have as a  
19 precursor -- well, I have the entire DPA, if you will, so  
20 it's the background. And then I have the paragraphs of the  
21 Statement of Facts that are stipulated to and attached to  
22 that. That's what I have.

23 Q. The Statement of Facts that you've read, that's  
24 limited to the conduct of two technical pilots who are  
25 referred to as Boeing employee one and Boeing employee two;

1 is that correct?

2 A. I would have to review it in its entirety. My  
3 understanding is that that is primarily what is being dealt  
4 with when we're talking about the limited scope not being  
5 disclosed to the FAA AEG. My understanding was by those two  
6 individuals.

7 Q. It is Boeing employee one and Boeing employee two  
8 who were alleged to have withheld information about MCAS  
9 from the AEG, right?

10 A. That's correct.

11 Q. Nowhere in the Statement of Facts does it allege  
12 that any Boeing employee, other than Boeing employee one or  
13 Boeing employee two, withheld information about MCAS from  
14 the AEG, right?

15 A. You know, sir, I would have to review it. I know  
16 that there are places in the materials I've reviewed,  
17 including Mark Forkner's testimony, that suggest that there  
18 are other individuals that also were aware of MCAS's  
19 expanded scope.

20 THE COURT: Let me just say, I don't think Forkner  
21 testified. So testimony from that trial?

22 THE WITNESS: From that trial, sir, yes. My  
23 apologies. Testimony from that trial included either a chat  
24 or an email. It was regarding a shocker alert that we've  
25 previously discussed that MCAS was, in fact, operating down

1 to speeds, including all the way down to Mach .2. At least  
2 that's what the simulator engineer thinks.

3 So it appeared to me that Mr. Forkner was getting  
4 that information from -- we have sim engineers and techs  
5 that operate these multimillion-dollar sims and sometimes  
6 things go wrong.

7 That meant to me that Mr. Forkner had asked about  
8 what someone thought was going on, someone with simulator  
9 knowledge and experience, and he was told that it appeared  
10 that MCAS was going down to .2. So that individual as well  
11 would certainly possess that knowledge.

12 BY MR. JACOBS:

13 Q. Do you know whether that individual intentionally  
14 withheld that information from the Aircraft Evaluation  
15 Group?

16 A. I do not.

17 Q. The Statement of Facts also makes clear that the  
18 only information about MCAS that was alleged to have been  
19 intentionally withheld from the AEG was that MCAS had been  
20 expanded to operate at low speed, right?

21 MR. CASSELL: Objection, your Honor. That  
22 misstates the answer.

23 THE COURT: You can answer if you know, or if you  
24 need to see the documents, you can ask to see them.

25 THE WITNESS: I do know, sir. I would have to

1 find the reference. My review of the Statement of Facts  
2 uses the word, the expansion includes or included the speed  
3 reference that you're alluding to or referring to, but it  
4 didn't say that it was -- that the speed reference was  
5 solely the only parameter.

6 So the Statement of Facts discusses the expansion  
7 of MCAS and seems to take it as a whole is the way I read  
8 it. They do specifically call out the speed, but the  
9 Statement of Facts uses the word "includes."

10 BY MR. JACOBS:

11 Q. Nowhere in the Statement of Facts does it allege  
12 that Boeing employee one or Boeing employee two knew all  
13 aspects about how MCAS was designed, right?

14 A. In what time frame would your question refer to,  
15 sir?

16 Q. During the time frame that's discussed in the  
17 Statement of Facts.

18 A. Well, I don't agree. I think the Statement of  
19 Facts says at some point both Forkner and Gustavsson became  
20 aware that at least the speed expansion had occurred and  
21 that MCAS was firing on them in the sim.

22 In fact, using the language that MCAS was running  
23 rampant on them in the sim at speeds down to Mach .2. I  
24 think the time frame is important.

25 Q. Right.

1                   So I think what you're talking about is the  
2                   low-speed expansion. My question, though, is that nowhere  
3                   in the Statement of Facts does it allege that Boeing  
4                   employee one and Boeing employee two knew all aspects of how  
5                   MCAS was designed, right?

6                   A. I agree with that.

7                   MR. CASSELL: Objection, your Honor. Again, I  
8                   think it misstates the record. If you look at paragraph  
9                   25 -- I know the paragraph will speak to itself -- that  
10                  paragraph, as the witness has just talked about, says that  
11                  the expanded operational scope included speeds, and that's  
12                  what was not disclosed.

13                  THE COURT: Yeah. I think he's asking about what  
14                  those two individuals knew.

15                  MR. JACOBS: Correct.

16                  THE COURT: What they knew, Forkner and the other  
17                  fellow.

18                  And so, do you remember what the record says about  
19                  that? If you don't, that's fine. If you need to look at  
20                  the document --

21                  THE WITNESS: I believe I do. I think I can  
22                  answer that with my recollection. I believe that the fact  
23                  that the chat was entitled "Shocker alert" spoke to the fact  
24                  that at least Mr. Forkner didn't know about the speed  
25                  expansion up to that point.

1 Subsequent to that point, he clearly did. That's  
2 why the timing was important. As to the other aspects that  
3 we've discussed, I have reviewed no information to suggest  
4 that they knew one way or the other.

5 BY MR. JACOBS:

6 Q. Okay. So you just talked about the ratcheting  
7 effect and how it could push the nose of the plane  
8 effectively all the way down, correct?

9 A. If it's not -- if you've not been trained to  
10 properly counter that, yes, correct.

11 Q. Nowhere in the Statement of Facts does it allege  
12 that Boeing employee one or Boeing employee two  
13 intentionally withheld that aspect of MCAS's design from the  
14 AEG, right?

15 A. Well, sir, my opinion would be a description of a  
16 system running rampant on you in a simulator would -- there  
17 would only be so many things that he could be describing.

18 He certainly didn't go to the FAA and say that  
19 MCAS was running rampant on him in the simulator.

20 Q. Okay. So I think you're just reading into what  
21 that chat says. Even though the chat talks about MCAS  
22 running rampant, you are just reading into it and assuming  
23 that that meant at that point that the participants of that  
24 chat understood that MCAS could ratchet the nose of the  
25 plane all the way down, is that your reading of that?

1           A.     My reading of that is that the system was behaving  
2     in a manner that they didn't anticipate, didn't know how to  
3     counter, and didn't fully understand.

4           I don't know specifically if that meant -- I don't  
5     believe that, quite honestly, sir, that they let the  
6     simulator session go long enough for the complete ratcheting  
7     effect or anything near what the pilots of Lion Air 610 had  
8     to contend with in the fight of their life.

9           I don't believe Mr. Forkner's sim session lasted  
10    long enough for him to experience that.

11          Q.     When you talked about how MCAS, as it was  
12    originally designed by the engineers at Boeing, only  
13    received data from one angle of attack sensor, right?

14          A.     At the time of the crash, that's correct. The  
15    other two fail-safes or parameters under which MCAS was  
16    intended to operate had been -- one had been materially  
17    altered, the speed. And the second, the load factor, had  
18    been removed completely.

19          Q.     Nowhere in the Statement of Facts that you've read  
20    does it allege that Mr. Forkner or Boeing employee two  
21    intentionally withheld that aspect of MCAS's design from the  
22    AEG, right?

23          A.     I believe the answer I just gave you with respect  
24    to the description of what MCAS was doing in the sim would  
25    yield the same answer I just gave you. They didn't -- they



1 weren't forthright with what was happening to them in the  
2 simulator.

3 Q. I understand your point, but I guess what I'm  
4 asking, with respect to this design feature, the fact that  
5 MCAS received information only from a single AOA sensor,  
6 there's nothing in that chat that actually speaks to that  
7 issue, right?

8 A. There's nothing in the chat that speaks to that,  
9 that's correct.

10 Q. And there's nothing in the Statement of Facts that  
11 speaks to that issue either, right?

12 A. I don't believe that that's accurate because, as I  
13 mentioned earlier, the Statement of Facts keeps referring to  
14 the expansion of MCAS, which from my professional  
15 engineering and piloting and the knowledge that we all now  
16 have stipulated to, that expansion was not merely the speed  
17 expansion.

18 The alteration of MCAS 1.0, if you will, to  
19 MCAS 2.0, which was what pilots of both Lion Air and  
20 Ethiopian faced.

21 If you're going to refer to -- the Statement of  
22 Facts refers to the expansion. And by my understanding, it  
23 includes all facets of that.

24 Q. You just don't know for sure what it actually  
25 includes, right? That's just your assumption?

1 A. What what includes, sir?

2 Q. When you say the expanded operational scope, it  
3 sounds like you're referring to every single design aspect  
4 of MCAS, right?

5 A. No. No, sir. I'm referring to the three things  
6 that we've been discussing all morning.

7 Q. So not necessarily the fact that MCAS, as it was  
8 designed, received information only from the single AOA  
9 vane, right?

10 A. We know that to be a fact, but that third pillar  
11 of safety, if you will, that was designed into MCAS, was  
12 never intended to be the sole -- the sole parameter  
13 responsible for when MCAS could fire.

14 It was supposed to be one of a three-legged tier  
15 to ensure that MCAS would never fire except for this very  
16 broad, narrow range of its operating envelope.

17 The expansion of the speed and the removal of the  
18 1.3 G or greater load requirement left only this very  
19 vulnerable, single angle of attack sensor as the last  
20 remaining safeguard to MCAS firing virtually right after  
21 takeoff. That's what I'm trying to explain.

22 Q. And Captain Norton, you haven't seen anything,  
23 either in the Statement of Facts or anywhere else, that  
24 shows that Mr. Forkner understood, that he knew that MCAS  
25 received information only from a single AOA vane, right?

1 A. That is correct.

2 Q. Though you are aware that Boeing did, in fact,  
3 provide information about MCAS's engineering design to the  
4 FAA's Aircraft Certification Office, right?

5 A. I have been told to accept that as fact, yes.

6 Q. And you are aware that the Aircraft Certification  
7 Office certified the MAX as airworthy for U.S.-based  
8 airlines, right?

9 A. They did.

10 Q. And there's no allegations in the Statement of  
11 Facts that any information about MCAS was intentionally  
12 withheld from the Aircraft Certification Office, right?

13 A. The only information I've been provided, sir, is  
14 that additional information about MCAS was provided to the  
15 ACO, but that was outside of the scope of what I was  
16 expected to testify to.

17 That my testimony was specifically with regard to  
18 what the AEG knew or didn't know in terms of making it an  
19 appropriate level of pilot training requirement.

20 Q. Captain Norton, in Section 4.3 of your report, you  
21 list what you call "Critical safety-based issues" that  
22 Boeing was aware of, right?

23 A. I don't --

24 Q. That's on page eight of your report.

25 A. Yeah, let me grab it.

1 Q. Sure. Have you found that, Captain Norton?

2 A. I'm sorry. The page again?

3 Q. Sure. Page eight.

4 THE COURT: It's your page four.

5 THE WITNESS: It's my page four. Okay. Thank  
6 you.

7 BY MR. JACOBS:

8 Q. It's also Movant's -- page eight of Movant's 11.

9 A. Yes, I have it.

10 Q. And so, it looks like you list five items in that  
11 section, right?

12 Just counting the bullets on the side?

13 A. Yeah, those are five main items. Yes, sir.

14 Q. These are all issues about MCAS that you've since  
15 learned about since after both of these crashes, right?

16 A. Some of them, yes. In some -- yeah, after both  
17 crashes and after reading and digesting both the accident  
18 reports and the House Committee Report, yes.

19 Q. And some of these include major design issues with  
20 the way that MCAS was designed by Boeing's engineers, right?

21 A. Not originally, no. Again, MCAS 1.0 or MCAS 2.0.  
22 There's a big distinction there.

23 Q. Between MCAS 1.0 and MCAS 2.0, MCAS always  
24 received information from a single AOA sensor, right?

25 A. That was true in both versions. However, once

1 again, MCAS 2.0 allowed the vulnerability to rely solely  
2 upon the single AOA, because the other two safety parameters  
3 had been either materially altered or removed from the  
4 equation.

5 Q. And between MCAS 1.0 and 2.0, MCAS could still  
6 ratchet the nose of the plane all the way down, right?

7 A. It could and it did.

8 Q. So those design features didn't change between  
9 MCAS 1.0 and 2.0, correct?

10 A. Are you referring to the specific -- let me try  
11 and just make sure I understand your question. In MCAS 1.0,  
12 had all of the three safety requirements been met, the speed  
13 being Mach .6 to Mach .8, the load factor above 1.3 G, and  
14 the single AOA failure, are you asking if MCAS could still  
15 ratchet if it was activated with all three of those in place  
16 in MCAS 1.0?

17 Q. I'm saying in MCAS 1.0, if all three of those,  
18 let's call them safeguards or features, had been bypassed,  
19 MCAS could still ratchet the nose of the plane all the way  
20 down in 1.0 and in 2.0, right?

21 A. Yeah, I'm trying to follow. I'm not trying to be  
22 difficult. I think in MCAS 1.0, had it not been bypassed,  
23 had all of those three conditions been met, is what I hear  
24 you saying --

25 Q. Sure.

1           A.     -- could MCAS ratchet in the manner that it did  
2 when it was 2.0? Yes, it could.

3                 If MCAS didn't -- but it was designed to lower the  
4 nose to the point where the critical angle of attack feature  
5 would have been satisfied.

6                 However, if in 1.0, and this is a really important  
7 point, if the angle of attack sensor was erroneous, that's  
8 when MCAS, in that very expanded envelope of MCAS 1.0 with  
9 the previous -- the first feed requirements and the load  
10 factor, if that AOA sensor was faulty, if the airplane  
11 really wasn't exceeding the critical angle of attack but the  
12 airplane thought it was because of a faulty AOA sensor,  
13 then, yes, MCAS would continue to fire in that envelope.  
14 Does that make sense?

15                THE COURT: You're saying that that envelope --  
16 that envelope is the high-speed corkscrew?

17                THE WITNESS: Yes, sir.

18                THE COURT: So it's actually narrow. It's not a  
19 broad envelope, it's narrow?

20                THE WITNESS: It's a super narrow window of our  
21 operating envelope, way up here, if that's your screen, but  
22 I am saying that even if that angle of attack sensor was  
23 faulty.

24                If it wasn't, MCAS would be designed -- if the AOA  
25 sensor worked as intended, when MCAS fired in that very

1 narrow operating envelope, it was intended to push the nose  
2 over. A healthy AOA sensor would go, okay, the nose is  
3 down. We're good, and it wouldn't continue to fire.

4 Hopefully, then, the pilots would recover the  
5 aircraft, remove it from that undesired aircraft state and  
6 fly on.

7 THE COURT: Right.

8 THE WITNESS: I'm saying if that sensor was  
9 faulty, as it was in both of these crashes, then the  
10 ratcheting would continue, even in that narrow envelope.

11 BY MR. JACOBS:

12 Q. And I think you've been clear, though, that you  
13 haven't seen anything that shows that Mr. Forkner or Boeing  
14 employee two understood or knew that MCAS received  
15 information from one AOA vane?

16 A. Again, I have not seen that.

17 Q. So going through 4.3 of your report on page  
18 eight --

19 A. Yes.

20 Q. -- so you wrote the first bullet is that, "Boeing  
21 was aware that the MAX was vulnerable to erroneous MCAS  
22 activations because it relied on information from only a  
23 single AOA sensor, instead of two." Right?

24 A. That is what that reads, yes.

25 Q. And we've covered now that you haven't seen

1 anything that shows that Mr. Forkner and Mr. Gustavsson  
2 actually knew that MCAS relied on information from a single  
3 AOA sensor, right?

4 A. This report, sir, is post both accidents. At this  
5 point, I believe Boeing was completely aware of the fact  
6 that now -- in fact, their information to operators said, in  
7 the case of an erroneous angle of attack, that's what we,  
8 the pilot and industry community, were told.

9 So you're mixing up apples and oranges. What  
10 Mr. Forkner and Boeing employee two knew during the  
11 certification with the time frame that I'm referring to in  
12 this report, which is after both of these crashes.

13 Q. Well, I think that's precisely the point. I  
14 appreciate you making it clear that we're talking about  
15 apples and oranges.

16 What this is referring to is what The Boeing  
17 Company knew after the crashes. What I've been asking you  
18 about is what Mr. Forkner and Boeing employee two knew  
19 during the time that's alleged to be the conspiracy period  
20 in the DPA, right?

21 A. My ability to answer that the best is that I think  
22 Boeing knew when Mr. Forkner knew that MCAS was running  
23 rampant in the sim and was now active down to .2 Mach, there  
24 had to be an awareness or there should have been an  
25 awareness on Boeing's part that one of the three legs of the



1 stool, the safeguards, had been removed.

2 And then a reasonable and safe company says, what  
3 is the impact of that expansion?

4 And you do it in a completely separate additional  
5 analysis from what was previously done, because the scope  
6 had been expanded in such a substantial manner that you now  
7 have to look at the other two legs of the stool and see what  
8 happens if one of those two fails or is removed and that  
9 wasn't done.

10 Q. So, Captain Norton, it sounds as though you are  
11 talking about the whole Boeing Company and suggesting it's  
12 your opinion that The Boeing Company was really negligent  
13 here?

14 They should have done more.

15 I think in your own words, they should have known,  
16 they should have done something more, right?

17 MR. CASSELL: Objection, your Honor. That  
18 misstates the record. That's not her testimony.

19 THE COURT: Okay. You can answer the question if  
20 you understand it.

21 THE WITNESS: Thank you, sir. I think I do.  
22 Again, I will come back to the point in which I will give  
23 Mr. Forkner his due credit, and I will assume that he was  
24 operating in his capacity as the chief technical pilot, had  
25 no ill intent, but at the point where he was made aware of

1 MCAS's behavior in the sim, and that it was active down  
2 to .2, he is Boeing in that sense.

3 Not only did he not represent that, direct, go  
4 straight to the FAA AEG and disclose that information, he  
5 engaged in a campaign to keep that information hidden.

6 BY MR. JACOBS:

7 Q. And nobody here is disputing that Mr. Forkner  
8 withheld information about MCAS's low-speed expansion from  
9 the AEG, but my questions have been about what else did  
10 Mr. Forkner know or not know?

11 Did Mr. Forkner, as far as you've seen, know MCAS  
12 received information from a single AOA vane?

13 You said, no, I haven't seen anything to that  
14 effect.

15 I've asked you, has Mr. Forkner --

16 Do you see anything that Mr. Forkner knew that  
17 MCAS could ratchet to an unlimited degree such that it would  
18 push the nose of the plane all the way down. I think you  
19 said no to that, right?

20 So I'm trying to make a distinction between The  
21 Boeing Company, which I hear you talking about, and all the  
22 information from The Boeing Company, as opposed to what  
23 Mr. Forkner and Boeing employee two knew.

24 A. I understand where you're going, sir. I would  
25 offer the opinion that, as part of an evaluation team for a

1 major aircraft manufacturer, and as an engineer that's sat  
2 in meetings, as much as you would like to suggest that they  
3 all operate in a vacuum or in individual silos and don't  
4 communicate with one another, the day that Mr. Forkner  
5 crawled out of that simulator and was shocked and alerted to  
6 the point where he had to communicate that to another Boeing  
7 employee, albeit another technical pilot, it was incumbent  
8 upon him, as a Boeing employee responsible for the safety of  
9 the lives of passengers and crew, to communicate that  
10 information and say something is amiss here, and we need to  
11 reevaluate the system.

12 I sat in hundreds of meetings as an engineer  
13 working with flight test pilots, working with technical  
14 pilots, and this information gets shared. It is not held  
15 from individuals. And the company doesn't operate in a  
16 vacuum of not sharing this type of information, especially  
17 when it's this safety-critical.

18 THE COURT: It sure does seem the FAA does,  
19 though. They operate in a vacuum. They sure did in this  
20 case.

21 THE WITNESS: It seems to be, sir.

22 THE COURT: Stacey Klein didn't attend some of  
23 these meetings where this was discussed.

24 THE WITNESS: If I may, your Honor? The  
25 information I've reviewed --

1 THE COURT: I'm not saying that exonerates Boeing.

2 THE WITNESS: Sure.

3 THE COURT: I'm not trying to say that.

4 THE WITNESS: Understood.

5 I've reviewed some limited information about the  
6 meetings I think you're referring to, and the only thing  
7 that I -- chronology is really important to me and to my  
8 testimony in terms of who knew what, when. And I wasn't  
9 here to hear her testimony, but I have read it and I think  
10 the time factor is --

11 You know, that was in between the accidents. And  
12 if I would be allowed to say, the information about MCAS  
13 that was put out, even in the interim, whether meetings were  
14 attended by Stacey Klein or not, the information that  
15 someone like myself received through Boeing and -- was  
16 materially incomplete and actually inaccurate.

17 So I believe those meetings were not in the  
18 certification phase, as I read Ms. Klein's testimony, which  
19 only served to corroborate my opinion that Level D would  
20 have been mandated anytime the potential for a catastrophic  
21 occurrence was discovered.

22 At the time the determination for Level B was  
23 made, those meetings followed. In fact, they were after the  
24 Lion Air, the first accident, is my understanding.

25 ///

1 BY MR. JACOBS:

2 Q. Captain Norton, you testified that you actually  
3 read -- in preparation for your testimony, you read or  
4 you've seen a chat conversation talking about a shocker  
5 alert. We've talked about that a number of times now.

6 So with the Court's permission, I would like to  
7 hand that up to the witness. I've given a copy to counsel.

8 MR. CASSELL: Your Honor, I would note for the  
9 record that this document that's just been provided to us,  
10 if you'll look at the bottom left-hand corner, it says,  
11 "Confidential treatment requested by The Boeing Company."

12 This relates to, as your Honor knows, the motion  
13 that we have pending. We believe that both the government  
14 and Boeing have reams of information that they've designated  
15 as confidential.

16 And then apparently now, the Justice Department  
17 feels free to pull from their confidential files documents  
18 that are helpful to our case, while simultaneously denying  
19 us access to information that would be helpful to our case.

20 So I don't know if it's a rule of completeness,  
21 but I think this is completely and fundamentally unfair to  
22 allow the Justice Department to deploy confidential  
23 information in service of their case, without disclosing to  
24 the families confidential information that serves our case.

25 THE COURT: Okay. We will take that up later.

1 Go ahead.

2 BY MR. JACOBS:

3 Q. Do you have a copy of that?

4 A. No, sir, I do not.

5 MR. JACOBS: May I approach?

6 THE WITNESS: Thank you.

7 BY MR. JACOBS:

8 Q. So, Captain Norton, this is the shocker alert chat  
9 that you've been talking about. This was introduced during  
10 the trial of United States vs. Mark Forkner.

11 You said you read the testimony from that that was  
12 introduced as Government Exhibit 22 and was publicly filed  
13 on the Court's docket as part of that case.

14 MR. CASSELL: Your Honor, just on that point, I  
15 believe we have pending with the Court a request to have  
16 access to the Forkner trial exhibits, and I might be wrong,  
17 I don't know that we have received those exhibits yet.

18 So, once again, we're being denied access to  
19 information that the government is using in service of their  
20 case, while we're not being provided an opportunity to use  
21 it in service of our case.

22 THE COURT: So there's a motion to? What is the  
23 motion? To release trial exhibits?

24 MR. CASSELL: I shouldn't say there was a motion.  
25 After the Forkner trial concluded, there were others on our

1 team that contacted the Court and the Court's clerk, I  
2 believe, saying we would like to see the exhibits that were  
3 used in the Forkner trial. We were told that that request  
4 was under advisement. And to my knowledge, that request  
5 continues to be under advisement today.

6 THE COURT: Okay.

7 MR. CASSELL: So once again --

8 THE COURT: Let me just say this. I don't know  
9 about this. And so, I wouldn't know if there was a motion  
10 on file. If you've formally done it, it hasn't made its way  
11 to me from the clerk's office. So -- because the exhibits  
12 are usually public, unless there's a reason for them not to  
13 be public, so look on the docket and see.

14 MR. CASSELL: Thank you. We will check it.

15 THE COURT: Because irrespective of this  
16 proceeding, the exhibits should be public, unless there's a  
17 reason for them not to be public for you and for anyone  
18 else.

19 MR. CASSELL: Right. And I think part of the  
20 reason was that the documents were -- allegedly involved  
21 proprietary information and so forth.

22 THE COURT: Right. And it may be that I've  
23 refused to make them public, but I don't have a memory of  
24 this being briefed so that I can make that balance.

25 MR. CASSELL: Right. Our request was just an oral

1 request via telephone to the clerk, but we will double-check  
2 on that.

3 THE COURT: Okay.

4 BY MR. JACOBS:

5 Q. Okay. So, Captain Norton, I'm showing you this  
6 chat.

7 Okay. This is what you've been referring to,  
8 right?

9 We're talking about the November 15th, 2016, chat  
10 between Mark Forkner and another employee at The Boeing  
11 Company, right?

12 A. Yes, the excerpt that I've testified to. The  
13 shocker alert we are talking about appears to be an excerpt  
14 from this complete conversation.

15 Q. And so, right here, you are talking about this,  
16 "Oh, shocker alert. MCAS is now active down to Mach .2,"  
17 right?

18 A. Yes, sir.

19 Q. And they say, "Oh, great. That means we have to  
20 update the speed trim description in volume two."

21 Mark Forkner at 6:51 says, "So I basically lied to  
22 regulators, unknowingly."

23 And the other Boeing employee at 6:51 says, "It  
24 wasn't a lie. No one told us that was the case," right?

25 A. That's how it reads, sir.



1 Q. If you turn to the second page of this chat, at  
2 6:53 p.m., Mr. Forkner says, "Vince is going to get me some  
3 spreadsheet table that shows when it's supposed to kick in.  
4 Why are we just now hearing about this?" Do you see that?

5 A. I do.

6 Q. And then below that, the other Boeing employee, at  
7 6:53 p.m., says, "I don't know. The test pilots have kept  
8 us out of the loop," right?

9 A. That's how it reads, sir.

10 Q. So just looking at this chat, going back to page  
11 one, Mr. Forkner wrote, "Oh, shocker alert. MCAS is now  
12 active down to Mach .2"; do you see that?

13 A. I do.

14 Q. Okay. Mr. Forkner didn't say anywhere in this  
15 chat that he learned at this point that MCAS only received  
16 information from a single AOA sensor, right?

17 A. That does not say that in this chat.

18 Q. And nowhere in this chat does it say, between  
19 Mr. Forkner or the other Boeing employee, that they  
20 understood or learned, even as of this time, that MCAS could  
21 ratchet the nose of the plane, essentially, all the way down  
22 into a vertical position, right?

23 A. It does not say that in this chat specifically.

24 Q. And if we turn to the second page, where  
25 Mr. Forkner, at 6:53 p.m. says, "Why are we just now hearing

1 about this?" Do you see that?

2 A. I do.

3 Q. You haven't seen anything that shows that  
4 Mr. Forkner, in fact, learned about MCAS's low-speed  
5 expansion before the date of this November 15, 2016, chat,  
6 right?

7 A. That's correct.

8 Q. And Mr. Gustavsson said, "The test pilots have  
9 kept us out of the loop"; do you see that?

10 A. I do.

11 Q. Do you know what the difference is between a test  
12 pilot and a technical pilot, Captain Norton?

13 A. You know, sir, in all fairness, I probably did  
14 when -- 100 years ago when I was an airframe engineer, but I  
15 wouldn't be able to.

16 My 30,000-foot view is that the test pilots are  
17 performing the maneuvers on the flight test cards that are  
18 required for certification.

19 For instance, the upper narrow corner of MCAS and  
20 the flight envelope, taking the airplane up there as  
21 described, making sure it's recoverable. There are a  
22 thousand test cards, as they're referred to, that have to be  
23 run in precertification when the airplane is still deemed  
24 experimental. I was part of some of those for the systems I  
25 worked on.

1 I know that we had technical pilots as well. I  
2 wouldn't be able to accurately differentiate those duties  
3 for you.

4 Q. So the test pilots, though, they're actually the  
5 ones up in the sky flying an actual plane, right?

6 A. Yeah, I believe they do also have exposure to the  
7 sim, but they are actually taking the airplane up and  
8 running the certification data test cards.

9 Q. And Mr. Forkner was a technical pilot, different  
10 than a test plot, right?

11 A. Different. I don't know that that meant he was  
12 precluded from actually operating the actual aircraft. I  
13 don't know that. But I know that he was, you know, in the  
14 sim primarily is how it read to me.

15 Q. And have you during the course of your career,  
16 have you been involved in the development of simulators?  
17 Flight simulators?

18 A. No, sir, I have not.

19 Q. Do you know colleagues of yours or people of yours  
20 who have been involved in the development of flight  
21 simulators?

22 A. Colleagues of mine?

23 Q. Uh-huh.

24 A. I know that back in my days as an airframe  
25 engineer that the simulators we worked on for our own

1 specific aircraft had people from our airframe provide  
2 input, sit in there and help to assert the tactical field,  
3 the look of the simulators, the screens, the hydraulic  
4 pressure, appropriateness of feel and those types of things.  
5 I worked with those people once upon a time. They're not  
6 currently my colleagues.

7 Q. The flight simulators, as they're being developed,  
8 do they often take a long time to be developed?

9 A. I couldn't speak to that, sir.

10 Q. Do you know whether flight simulators, as they're  
11 being developed, encounter a series of errors?

12 A. In my world now, I'm more familiar with, not the  
13 development piece of it, but the fact that, you know,  
14 they're highly sensitive, very complicated,  
15 multimillion-dollar machines subject to the same errors and  
16 pitfalls that normal airplanes can go through, or similar.

17 We see that when they're used continually 24/7/365  
18 in a training center. I could speak to that. But from the  
19 development aspect, I don't really have much information for  
20 you.

21 Q. Captain Norton, do you recall the testimony from  
22 the Forkner trial about discrepancy reports in the  
23 simulator?

24 A. I do not.

25 MR. CASSELL: Objection, your Honor. This is

1 beyond the scope of direct.

2 THE COURT: Overruled.

3 BY MR. JACOBS:

4 Q. Do you recall any testimony at the Forkner trial  
5 about how there were over 1,000 discrepancy reports,  
6 something to that effect, in the simulator that was being  
7 developed?

8 A. I do remember reading, taking away the impression  
9 that there were a fair number of DRs that were being  
10 addressed. I don't know over what period of time but --

11 Q. Do you know how many of those were experienced by  
12 Mr. Forkner?

13 A. I do not, sir.

14 Q. I'm just going to take that down.

15 If we could go back, Captain Norton, if we could  
16 go back to your list, 4.3. It's on page eight again of your  
17 report.

18 A. Yes, sir, I have it.

19 Q. Okay. So the second bullet that you wrote, you  
20 wrote that, "Boeing was aware that MCAS had a resync feature  
21 causing it to resync every time pilots attempted to stop the  
22 erroneous MCAS activation," right?

23 A. That's what it says, yes.

24 Q. And you haven't seen anything that shows that  
25 Mr. Forkner or Boeing employee two knew about that, what you

1 call a critical safety-based issue, right?

2 A. Again, out of context, sir, this report was  
3 written after both accidents. I was not -- nothing in this  
4 report specifically references or was intended to reference  
5 what Mr. Forkner or Boeing employee two specifically knew.

6 Q. You also wrote that, Boeing was aware that MCAS  
7 was capable of commanding and trimming the 737 MAX so much  
8 that it would leave the pilots without the ability -- I'm  
9 just paraphrasing it here, feel free to correct me -- but it  
10 would leave the pilots without the ability to pull the nose  
11 of the plane back up if the plane were essentially diving  
12 toward the ground, right?

13 A. Well, sir, at this point, Boeing knew it and so  
14 did the greater aviation community. Again, this was after  
15 both accidents. So, yeah, not only did Boeing knew [sic] it  
16 we now all knew it.

17 Q. So at the time, at the time that's alleged in the  
18 Statement of Facts in the criminal information, you haven't  
19 seen anything that Mr. Forkner or Boeing employee two knew  
20 of this information, right?

21 A. With respect to during development, is that --

22 Q. Yes, Captain.

23 A. That's correct.

24 Q. You also wrote that, "Boeing was aware that an  
25 erroneous angle of attack sensor could cause a number of

1 highly distracting indications and effects in the cockpit";  
2 is that right?

3 A. That's correct.

4 Q. You talked about them being a basic cacophony of  
5 distractions, right?

6 A. Yes, sir.

7 Q. And there's no allegation in the Statement of  
8 Facts or anything that you've seen that shows that during  
9 the development of the 737 MAX that Mr. Forkner or Boeing  
10 employee two were aware of that particular issue, right?

11 A. I have not reviewed any of that information.

12 I think I would, if I may be permitted, in answer  
13 to that question and your previous question, once again, the  
14 time frame is important because what was discovered by  
15 Mr. Forkner, if we're going to continue to discuss what  
16 Mr. Forkner knew, the line in the sand I continue to try to  
17 draw is the shocker alert, "The MCAS running rampant on me  
18 in the sim," an awareness of the speed change from Mach .6  
19 to Mach .2, which is substantial, at that juncture, Boeing  
20 did know or an employee of Boeing, a representative of  
21 Boeing who experienced -- and two, and then later three,  
22 because of the disclosure, knew that the system was not  
23 operating as intended. And their own employee, their own  
24 chief technical pilot didn't understand why.

25 Q. And so -- go ahead.

1 A. My apologies.

2 So my report here, covering after both of these  
3 accidents, seeks to undermine [sic] the very critical  
4 concept that both of these accidents would have been  
5 prevented but for a disclosure that this system on the  
6 airplane, which pilots knew nothing about, wasn't operating  
7 as intended, even for the employees of Boeing.

8 Q. What do you mean by your report "seeks to  
9 undermine" something?

10 A. Underline. I'm sorry, I misspoke. Seeks to  
11 highlight the fact that there was a juncture in Boeing's  
12 knowledge, and it was specifically when MCAS was, "Running  
13 rampant on Mr. Forkner in the sim."

14 The chat you just showed me says, "How come we  
15 didn't know about this before?"

16 I can't answer that because apparently the test  
17 pilots had kept it from the technical pilots. But you know  
18 what, he knew about it then. That's in 2016.

19 Q. I understand, Captain. I think the only thing  
20 that you can say that Mr. Forkner or the other Boeing  
21 employee came to learn in that chat is that MCAS had been  
22 expanded to low speed, right?

23 A. That's the factual piece of information. And what  
24 would naturally have to follow and what should have followed  
25 from a safety-minded organization after a disclosure like



1 that, after a piece of information so shocking that a  
2 technical pilot would say "Shocker alert," is that an entire  
3 reevaluation of that system should have been undertaken.

4 Q. Captain Norton, you're just using the words again,  
5 "What should have happened," correct?

6 A. What it was incumbent upon Boeing to do at the  
7 point that this critical safety system that could take  
8 control of the flight controls of an aircraft wasn't  
9 operating as intended.

10 What it was incumbent upon a safety-minded  
11 organization to do at that point was to reevaluate the  
12 system.

13 Q. That's what The Boeing Company, in your opinion,  
14 should have done, right?

15 A. That is correct.

16 Q. Captain Norton, going back to your reading of the  
17 transcript from the Forkner trial. You know that  
18 Mr. Forkner actually filed one of those discrepancy reports  
19 after this chat?

20 MR. CASSELL: Objection, your Honor. Again, this  
21 is beyond the scope of direct. It's dealing with materials  
22 that Mr. Forkner was introducing to try to undercut the very  
23 Statement of Facts that your Honor said we could not  
24 contradict in this case.

25 So I don't think the Justice Department should be

1 allowed to say, well, look at the defense case in the  
2 Forkner case, and that somehow that sheds light on the  
3 issues here.

4 THE COURT: What do you say about that as it  
5 relates to the Statement of Facts?

6 MR. JACOBS: The witness has testified, your  
7 Honor, about her reading of the Forkner transcript. There's  
8 already been an objection because she only testified about  
9 what she read during the direct examination.

10 I do think it's relevant to her testimony today to  
11 just ask her, for completeness, what she knew about  
12 Mr. Forkner and what he did with respect to this particular  
13 chat.

14 THE COURT: And I'm just wondering, though, my  
15 question to you is, the Statement of Facts say what he did  
16 and didn't do, and what he failed to disclose. And so, how  
17 does this relate to those Statement of Facts?

18 MR. JACOBS: I think it goes to her ultimate  
19 opinion today about what was a but-for cause of the crashes  
20 and whether Mr. Forkner did or didn't do the right thing.

21 She's already testified that Mr. Forkner should  
22 have done something, which I still don't think gets us to  
23 where we need to be, but I think it's worth probing, just by  
24 one or two questions, whether she's aware of these  
25 particular facts that came about.

1 THE COURT: All right. Overruled.

2 You can answer the question.

3 THE WITNESS: I have not been made aware of that  
4 information.

5 BY MR. JACOBS:

6 Q. And do you know from your review of the transcript  
7 in the Forkner trial that earlier in 2016, so before this  
8 chat, that there was a test flight where MCAS was  
9 experienced by people from the FAA?

10 Actually, I will just rephrase that.

11 Are you aware that earlier in the Forkner trial  
12 that there was testimony about how FAA officials were on a  
13 737 MAX where MCAS engaged?

14 Are you aware of that?

15 MR. CASSELL: Again, your Honor, I object. This  
16 is beyond -- at most, what we opened the door to was the  
17 direct testimony of Stacey Klein. You will recall that I  
18 only read, I think about 18 lines in her testimony that  
19 dealt very directly with the Level-B vs. Level-D issue.

20 And now we're getting into all kinds of other  
21 things that, you know, we're going to have to rebut. We're  
22 going to have to get information for. I think this is far  
23 beyond the scope of direct and far beyond what information  
24 we have.

25 THE COURT: Right. I'm just wondering what this

1 gets to, that we have to decide here in a way that doesn't  
2 contradict the Statement of Facts?

3 You're locked into the Statement of Facts. So  
4 that's what I'm wondering.

5 BY MR. JACOBS:

6 Q. I will just ask another question.

7 In your report, Captain Norton, you seem to take  
8 issue, I think it's the end of your report on 4.3 still, you  
9 seem to take issue -- I'm just phrasing it because I've read  
10 the way that you've written it here -- that Boeing required  
11 its customers to pay for an AOA disagree alert, which you  
12 say should have been standard, right?

13 It's at the bottom of page eight.

14 A. Actually, sir, Boeing intended that alert to be  
15 standard, but tied it to an AOA disagree alert. So that  
16 really wasn't made clear to any --

17 I mean, operators believed that they had it when  
18 they didn't. That's what I was critical of. That's just  
19 one piece of information operators didn't have or was  
20 unclear to them.

21 Q. And you haven't seen anything that shows that  
22 Mr. Forkner or Boeing employee two were involved in that  
23 decision-making process, right?

24 A. That's correct.

25 Q. And so, if Mr. Forkner or Boeing employee two

1 didn't have information about these various critical  
2 safety-based issues that you've described in your expert  
3 report, then it stands to reason that Mr. Forkner or Boeing  
4 employee two couldn't have shared that information with the  
5 AEG, right?

6 In other words, you can't share with the AEG  
7 information that you don't know?

8 A. My opinion is that he didn't share information  
9 that he did know, which was particularly what was happening  
10 to him in the simulator. And until you conduct and  
11 expand --

12 THE COURT: Well, let me just stop you. I think  
13 he's just dividing up between what he knew and didn't know.

14 THE WITNESS: Right.

15 THE COURT: It just seems logical that, if he  
16 didn't know about this disagree alert, you can't fault him  
17 for not disclosing.

18 THE WITNESS: I agree with that. But of the  
19 three-legged stool that we are talking about here,  
20 respectfully, your Honor, that expansion to low speed.

21 So just for purposes of -- Mach .2 doesn't mean  
22 anything to anyone in this courtroom, but when I'm going  
23 down the runway and I lift the nose of the airplane, rotate  
24 the aircraft, if you will, I typically, on the MAX,  
25 depending on how heavy I am, that's somewhere in the

1 vicinity of 150 to 155 knots. The minute I -- that's  
2 essentially Mach .2. The moment I start to go flying now,  
3 MCAS --

4 THE COURT: No, yeah, I get it. I think I'm just  
5 trying to keep this --

6 THE WITNESS: Yeah, I think he's --

7 THE COURT: -- moving, and I think he's just  
8 trying to cut through this, what Forkner knew, what Forkner  
9 didn't know.

10 What he knew, he should have disclosed. What he  
11 didn't know, he can't disclose, I think is the purpose of  
12 his question.

13 THE WITNESS: I understand and agree.

14 My rebuttal to that is not knowing -- or  
15 disclosing the one piece of information he did now know  
16 would have forced an entire reevaluation -- it would have  
17 been enough.

18 That piece alone would have been sufficient to  
19 force a complete reevaluation of the system with its  
20 expanded capacity, if there are potential catastrophic  
21 effects that drives the hazard analysis, if you will.  
22 Boeing did a functional hazard analysis based upon the fact  
23 that there were only major effects.

24 When you get into the next category of risk  
25 assessment and you have a potential catastrophic effect,

1 which we obviously now know that we did, it drives an  
2 assessment -- two separate assessments called a fault tree  
3 evaluation and a failure modes effect analysis.

4 They take a substantial amount of time. They, on  
5 a component level -- and that's where the single AOA point  
6 of failure would have been recognized as catastrophic, but  
7 for the other two legs of the stool not being present.

8 But Forkner robbed Boeing and the FAA AEG of the  
9 opportunity to assess that by not disclosing what he saw in  
10 the simulator.

11 BY MR. JACOBS:

12 Q. Captain Norton, you are aware that, after the  
13 first plane crash, after the Lion Air crash, that the FAA  
14 did not require the 737 MAX to be grounded in the United  
15 States, right?

16 A. I am aware of that fact.

17 Q. You are aware that, after the first plane crash,  
18 the AEG did not require full-flight simulator training for  
19 the MAX, right?

20 A. I am aware of that. There's an explanation as to  
21 why.

22 MR. CASSELL: Your Honor --

23 THE WITNESS: But, yes, I am aware of that.

24 MR. CASSELL: And your Honor, this was the very  
25 subject that I planned to address in the interim period with

1 Captain Norton. So we have no objections to him exploring  
2 this, but we would expect to have a full and fair  
3 opportunity to make our response later.

4 BY MR. JACOBS:

5 Q. Captain Norton, the AEG, they issued what's called  
6 an Emergency Airworthiness Directive, correct?

7 A. That's correct.

8 Q. And that told U.S.-based pilots to follow the  
9 runaway stabilizer checklist that all U.S.-based pilots are  
10 trained to, right?

11 A. The emergency AD didn't necessarily do that.  
12 Well, it directed pilots to that.

13 My understanding is that, prior to the emergency  
14 AD, Boeing was allowed to produce a bulletin to their FCOM  
15 which, in fact, instructed pilots like myself to do exactly  
16 what you said. And the emergency AD followed the next day.

17 Q. Okay. So you are aware, though that, when the AEG  
18 issued the Emergency Airworthiness Directive, that at that  
19 point they knew that MCAS had been expanded to operate at  
20 low speed, right?

21 A. What they -- no, I don't know that they knew that  
22 on that day.

23 What they knew was that a system they previously  
24 understood would only operate in a very narrow, upper corner  
25 of the operating envelope, had apparently fired, not meeting



1 those conditions, and they begun the process of  
2 understanding why.

3 Q. And they understood that the Lion Air crash  
4 happened shortly after the plane had taken off at lower  
5 speeds, right?

6 A. They did understand that, yes.

7 Q. And so, they understood that MCAS was no longer  
8 limited to high-speed wind-up turns, right?

9 A. Again, sir, you would have to ask the FAA what  
10 they knew. I can't speak to that.

11 The information I have reviewed is that this was  
12 as much of a shocker alert to them as MCAS running rampant  
13 in the sim was to Mr. Forkner. And they didn't know what  
14 they didn't know, if you will, that it was so early after  
15 this accident that they needed to conduct more analysis.

16 Q. The only thing that I think that you said that  
17 you've seen that Mr. Forkner and Boeing employee two  
18 recognized in that chat and anywhere else, was that MCAS had  
19 been expanded to low speed, right?

20 A. Well, I believe the chat also said, "I unknowingly  
21 lied to the regulators." So certainly, there was time to  
22 undo that lie.

23 Q. Right.

24 Captain Norton, I'm not talking about what  
25 Mr. Forkner should have done or what Mr. Gustavsson should

1 have done that's referenced in that chat, right?

2 I'm talking about what they knew at the time. And  
3 based on your testimony today, the only thing that you have  
4 seen is that they were aware that MCAS was expanded to  
5 Mach .2, the low speed, right?

6 A. That's what the chat actually references. I don't  
7 know whether it's convenient or not, but you omitted the  
8 part where Boeing employee two, and I will read, it says,  
9 "Oh, great. That means we have to update the speed trim  
10 description in volume two."

11 Q. Is there anywhere in that sentence where that  
12 employee is talking about that MCAS received information  
13 from a single AOA vane?

14 A. No. Again, you're mixing apples and oranges. But  
15 he did understand that information relative to what the AEG  
16 knew at that time about MCAS was incorrect and fundamentally  
17 needed to be corrected. You keep coming back to AOA, and  
18 I'm talking about speed.

19 Q. Right.

20 And that's the only thing specifically referenced  
21 in the Statement of Facts, right?

22 A. And it's enough. Again, it's akin to your car's  
23 accelerator not being able to stick unless you're going 120  
24 miles an hour, but now it sticks at 35 and nobody told you.

25 Q. Right. It's certainly enough for The Boeing

1 Company to make admissions in connection with the criminal  
2 information in the Statement of Facts, right?

3 A. It's enough for me.

4 Q. Okay. But what I'm asking you about is other  
5 parts of MCAS that later came out that people realized were  
6 issues with MCAS, issues with the way it was designed: the  
7 single AOA vane, the fact it would ratchet to an unlimited  
8 degree.

9 You didn't see anything or haven't seen anything  
10 in that chat, there's nothing in that chat that shows that  
11 Mr. Forkner or the other Boeing employee knew that  
12 information at that time, right?

13 A. That's correct.

14 MR. CASSELL: Your Honor, at this point, I would  
15 request that the witness be given a two-minute opportunity  
16 to review the entire chat, because this was thrust under her  
17 nose, you know, a few minutes ago.

18 THE COURT: If you need to, go ahead and look  
19 at it.

20 MR. CASSELL: If I could direct her?

21 Would it be permissible to point the witness to  
22 something that I think contradicts something Mr. Jacobs just  
23 said?

24 On the very bottom of page one, there's a  
25 reference to the "plane trimming itself like crazy." I'm

1 just wondering if that would bear on some of the issues that  
2 we're discussing here today.

3 THE WITNESS: I think, again, it speaks to -- it's  
4 in my opinion, Mr. Forkner expounding upon his running  
5 rampant. I mean, at 4,000 feet and 230 knots, which is  
6 arguably low speed and very close to the ground and not in a  
7 wind-up turn, Mr. Forkner clearly can't understand why MCAS  
8 is activating.

9 And yet, as a result of this chat, something is  
10 discussed between two technical pilots that should be  
11 updated with regard to information in MCAS, and none of  
12 those things happened.

13 BY MR. JACOBS:

14 Q. So after the Lion Air crash, the FAA AEG knew that  
15 MCAS was no longer limited to a high-speed wind-up turn  
16 because it kicked in during the Lion Air crash, right?

17 A. Well, they knew that it happened. They didn't  
18 know why. And I will --

19 Q. And the only thing that they did was issue the  
20 Emergency Airworthiness Directive, right?

21 MR. CASSELL: Objection, your Honor. The  
22 government must know that's not accurate. We introduced, I  
23 think it's Families' Exhibit 7, which has a long list of  
24 things the FAA did between the interim period.

25 And again, this was the information we were going

1 to produce through Captain Norton earlier. I will object  
2 because that completely misstates the record. I believe  
3 it's Families' Exhibit 7 that has a list of approximately 15  
4 things.

5 THE COURT: If you know what they did, that's  
6 fine. If you need to look at what they did, you can look at  
7 it. If you can answer the question, you can. If you can't,  
8 you can't.

9 THE WITNESS: Well, I know for a fact that it's  
10 materially false that they did nothing or were in the  
11 process of -- they were scrambling to try and -- proper  
12 analysis of a catastrophic failure like this in a fatal  
13 accident, when a system on board the airplane is not  
14 behaving as intended, is a process, sir.

15 It is a completely involved, lengthy process that  
16 involves multiple people within the aviation community, both  
17 the manufacturer and people at the FAA AEG and outside  
18 experts.

19 So to intimate that they did nothing except issue  
20 this FAA AEG -- I'm sorry, AD, Airworthiness Directive, is  
21 factually untrue.

22 BY MR. JACOBS:

23 Q. Well, Captain, what I'm asking you is that the one  
24 piece of information that Mr. Forkner and the other Boeing  
25 employee withheld from the AEG, the AEG now had that

1 information after the Lion Air crash and still issued the  
2 Emergency Airworthiness Directive, right?

3 A. Again, sir, I don't know what the FAA knew and  
4 when they knew it. I don't know if they knew, once again,  
5 that this system didn't activate in a realm that they  
6 expected it to.

7 Q. The only thing that you have seen, Captain, is  
8 that Mr. Forkner and Boeing employee two only knew that MCAS  
9 had been expanded to operate at low speed.

10 They didn't know about the AOA vane. You  
11 testified to that. They didn't know about the ratcheting.  
12 You testified that you haven't seen anything to that effect.

13 So the only thing that they have withheld from the  
14 AEG was about MCAS's low-speed expansion. After the Lion  
15 Air crash --

16 A. May I interrupt you? There's two parts.

17 THE COURT: Hang on a second. Hang on a second.  
18 Let's start over. Start over with your question and make it  
19 a single question, not multiple questions.

20 BY MR. JACOBS:

21 Q. After the Lion Air crash, the AEG had, at the very  
22 least, the one piece of information that Mr. Forkner and  
23 Boeing employee two had withheld from them, right?

24 A. Again, I don't know -- we know what the parameters  
25 were. I don't know at what point after the Lion Air crash

1 you are referring to. There were a little bit over four  
2 months in between the two crashes.

3 And to continue to characterize the withholding of  
4 the information about the expansion of the speed as only  
5 this one thing once again completely misrepresents the  
6 exponential amount of risk that had been contributed to  
7 operation of the 737 MAX by just that single parameter.

8 So it's not just a single piece of data that was  
9 not presented. It had far-reaching and exponential  
10 ramifications. And so, I think it does a disservice to this  
11 Court and people who don't understand aviation to suggest  
12 that expanding the speed down to essentially all facets of  
13 where this passenger-carrying revenue flight could operate  
14 does a disservice to the Court's understanding of what it  
15 was like to withhold that single piece of data.

16 Q. And the only thing that I've been asking you,  
17 Captain, is to make a distinction between that piece of data  
18 and the other pieces of information about MCAS that you've  
19 repeatedly now testified that you haven't seen anything that  
20 Mr. Forkner or Boeing employee two knew anything about?

21 A. And I believe I've answered that in the  
22 affirmative, several times.

23 Q. Now, did you also, as part of your review of the  
24 transcript from United States vs. Mark Forkner, did you  
25 review the testimony of David Loffing?

1           A.    The expert -- the excerpts, rather, that I was  
2 asked to review, there was some testimony by Mr. Loffing.  
3 My specific recall is that it had to do with removal of the  
4 1.3 G load factor requirement is what I recall reading.

5           Q.    Do you recall Mr. Loffing testified that how MCAS  
6 was designed and performed was one of the links, along with  
7 many others, that contributed to the accidents?

8           A.    I don't recall that specific testimony. I recall  
9 too his testimony regarding removal of the load factor.

10          Q.    Would you agree with Mr. Loffing that, in complex  
11 commercial airplane crashes, there are typically many links  
12 in a chain that lead to a particular crash?

13          A.    I think that's overly broad and I wouldn't  
14 categorize aircraft crashes in any common sense. There's  
15 always -- there are always contributory effects, but there  
16 are also -- I'll just leave it at that. I wouldn't  
17 characterize all aircraft accidents as the same.

18          Q.    Captain Norton, have you read the synopsis in the  
19 Lion Air crash report?

20                You talked earlier today about how you read the  
21 crash reports. Did you read the synopsis in that report?

22          A.    I don't know whether I have. If you would like to  
23 direct my attention to it, I can read it now.

24          Q.    Captain Norton, that's Movant's Exhibit 2.

25          A.    I have it.



1 Q. And the synopsis, the bottom of the page is Roman  
2 numeral XVIII. It's at the beginning of the report.

3 A. Okay. I have it.

4 Q. Okay. So you are aware, from reading the synopsis  
5 and your understanding of the facts, that Lion Air, Flight  
6 610, that crashed on October 29th of 2018, right?

7 A. What is your question?

8 Am I aware of this, that it crashed on this day?

9 Q. Yes. Yes.

10 A. Yes, I am.

11 Q. So you are aware that that crashed on October 29,  
12 2018, right? It's not a trick.

13 A. 2019?

14 Q. That crashed on October 29th, 2018.

15 A. Okay. Then is there a typo?

16 In the middle of my XVIII, it says, the  
17 following -- middle paragraph says, "The following morning,  
18 on 29 October 2019." That must be a typo.

19 Q. No, I think it's working forward in time. So  
20 we're starting with October 29, 2018.

21 A. Okay.

22 Q. And then you are going to three days earlier on  
23 the 26th of October 2018; do you see that?

24 A. Yep.

25 Q. So you wrote that in your report -- in Section 4.3

1 of your report, you wrote that, "The complete absence of  
2 Level-D simulator training for the 737 MAX pilots with  
3 respect to MCAS was directly causal to the crash of Lion  
4 Air, Flight 610," right?

5 A. That's correct.

6 Q. You are aware, though, that the flight immediately  
7 before Lion Air, Flight 610, crashed also had an erroneous  
8 MCAS activation, right?

9 A. It would appear that it did, yes.

10 Q. And you are aware that this was, in fact, on the  
11 exact same plane as the plane that crashed, right?

12 A. I am aware of that.

13 Q. Literally, the same tail number. I'm not talking  
14 about two separate MAXes in the Lion Air fleet; we are  
15 talking about the exact same plane?

16 A. Yes, sir.

17 Q. And you're aware from your review of the synopsis  
18 that there were maintenance issues with respect to that  
19 plane, right?

20 A. That's been represented by them, yes.

21 Q. That's been? I'm sorry, I couldn't hear you.

22 A. It's been represented that there were maintenance  
23 issues.

24 Q. In the synopsis?

25 A. In the synopsis.

1 Q. And, in fact, that plane had one of its angle of  
2 attack sensors replaced just the day before the crash  
3 flight, right?

4 A. That's what I understand, yes.

5 Q. And the synopsis also indicates that, when the  
6 Lion Air company installed the angle of attack sensor, it  
7 was incorrectly installed with a -- it says 21-degree bias.

8 Do you see that? It's in the third paragraph.

9 A. I do see that.

10 Q. For a plane heading up in the sky, a 21-degree  
11 difference, that's a massive difference, right?

12 A. Massive difference from what?

13 Q. From horizontal.

14 A. Well, we're not climbing at horizontal. So we're  
15 typically climbing at somewhere between 15 and 16 degrees,  
16 nose up. So it would be a roughly five-degree difference.

17 Q. Well, this is a 21-degree bias.

18 Do you know if it was on top of that 15 or 16  
19 degrees that you'd normally be climbing out at?

20 A. I don't know.

21 Q. So it's possible that it's actually 15 or 16  
22 degrees of your normal climb rate, plus another 21 degrees  
23 on top of that?

24 It could be that, right?

25 A. It could be.

1 Q. Do you typically fly out at almost a 40-degree  
2 angle when you fly out on a commercial flight?

3 A. Oh, no, sir. I just testified to what we climb  
4 out to.

5 Q. And so, you are aware from your review of the  
6 synopsis that because of the incorrectly installed angle of  
7 attack sensor on the flight that immediately preceded Lion  
8 Air, Flight 610, that those pilots experienced an erroneous  
9 MCAS activation, right?

10 A. That's my understanding.

11 Q. Yes or no, Captain Norton, did that flight crash?

12 A. That flight did not crash.

13 Q. Yes or no, Captain Norton, did that plane land  
14 safely?

15 A. That plane did land safely.

16 Q. Now, those pilots, they didn't have any  
17 information about MCAS, right?

18 A. No one had any information on MCAS at that point.  
19 So, no, they did not.

20 Q. Despite that complete absence of information on  
21 MCAS, that flight didn't crash, right?

22 A. Well, it's a little more complicated than that.  
23 That flight had a third pilot on board.

24 Q. Captain Norton, I was going to ask you --

25 THE COURT: Hang on a second. Hang on a second.

1 It is true that that flight did not crash?

2 THE WITNESS: I agree to that. There are also  
3 some extenuating circumstances.

4 THE COURT: Ask your next question.

5 BY MR. JACOBS:

6 Q. You are aware that after that plane landed, during  
7 the synopsis, that the pilots of that flight didn't report  
8 everything that they experienced in the cockpit, right?

9 A. My understanding is that they didn't report that  
10 they activated the stabilizer trim cutout switches on that  
11 flight.

12 Q. And it also says they didn't include the  
13 activation of stick shaker, right?

14 A. That's correct.

15 Q. Which I think you said earlier could be incredibly  
16 distracting and incredibly loud in the cockpit?

17 A. Certainly can.

18 Q. And so, they didn't report that.

19 And they didn't report the activation of the stab  
20 trim to cutout, right?

21 A. That's how the synopsis reads, yes.

22 Q. So, in other words, they didn't report that they  
23 flipped the stab trim cutout switch to disable the  
24 horizontal stabilizer from just moving electronically;  
25 right?

1 A. That's correct.

2 Q. And that's the same thing that a pilot is trained  
3 to do for a runaway stabilizer, correct?

4 A. Well, that's part of a nonnormal procedure for a  
5 standard runaway stabilizer trim, yes.

6 Q. And so, those pilots did what pilots experiencing  
7 a runaway stabilizer would do, they flipped the stab trim  
8 cutout switch, and then they landed the plane safely, right?

9 A. I don't know that that's the totality of what they  
10 did, but I do know that at some point during the event, they  
11 activated the stab trim cutout switches and ultimately  
12 landed the plane.

13 Q. You testified earlier that there's no -- I think  
14 it was your words -- turn-off MCAS button, right?

15 A. There's no MCAS button to turn off is I think what  
16 I testified to.

17 Q. But if you flip the stabilizer trim cutout switch,  
18 that turns off MCAS, right?

19 A. Yes. That's a very simplistic question and  
20 answer. But, yes, activating the stab trim cutout switches  
21 will disable MCAS.

22 MR. JACOBS: Just one moment, your Honor.

23 BY MR. JACOBS:

24 Q. Captain Norton, are you familiar with human  
25 factors?

1 A. I am.

2 Q. Are you aware that The Boeing Company conducted a  
3 human factors analysis with respect to a pilot experiencing  
4 an erroneous MCAS activation and concluded that a pilot  
5 would be able to resolve that issue within 10 seconds or  
6 less?

7 A. That is not my understanding of anything I've  
8 reviewed, no.

9 Q. If that was Boeing's assumption, would that be  
10 right or wrong?

11 A. It's an abject hypothetical. It wouldn't -- I  
12 don't know if you are talking about the first time it fires,  
13 with or without proper training and knowledge of the system.  
14 There are a lot of assumptions that are going into that  
15 question.

16 Q. Have you seen anything that shows that Mr. Forkner  
17 or Boeing employee two were involved in that human factors  
18 analysis?

19 A. No, sir. In fact, what -- and I would have to  
20 find the source -- but what I recall Boeing's assumption  
21 being was that a pilot would respond in three to four  
22 seconds. And that one of Boeing's own employees reported  
23 that it took him 10 seconds to respond. So I don't --  
24 somehow those are not congruent with what I recall  
25 reviewing.

1 Q. Have you seen anything that Mr. Forkner or Boeing  
2 employee two were involved in that discussion?

3 A. No, sir, I have not.

4 MR. JACOBS: Thank you very much, Captain.

5 Thank you, your Honor.

6 THE WITNESS: Thank you.

7 THE COURT: Okay. We will go ahead and take a  
8 lunch break. Why don't we start back up around 1:00.

9 (A recess was had at 11:59 a.m.)

10 (Court reconvened at 12:58 p.m.)

11 THE COURT: Okay. Please be seated. Who's taking  
12 it? You?

13 MR. HATCH: Good afternoon, your Honor. Ben Hatch  
14 on behalf of Boeing.

15 CROSS-EXAMINATION

16 (BY MR. HATCH:)

17 Q. Good afternoon, Captain Norton.

18 A. Good afternoon, sir.

19 Q. My name is Ben Hatch, and I represent The Boeing  
20 Company.

21 I would like to start with some of your background  
22 and approach as a testifying, proffered expert today,  
23 Captain Norton.

24 And just to look at your prior testimony, you were  
25 asked some questions, I believe, by one of the prior counsel



1 about whether you'd ever testified in a case involving The  
2 Boeing Company, do you recall that?

3 A. I do.

4 Q. And I think you couldn't recall off the top of  
5 your head?

6 I don't know if you have your report exhibit in  
7 front of you, Exhibit 11.

8 A. I do.

9 Q. I think it's on the very back page of that report.  
10 I will give you a second to turn to that.

11 A. Okay, sir.

12 Q. Do you have that there?

13 It looks to me like there were two cases that you  
14 list, depositions in which Boeing was a party, a defendant  
15 in both cases, Woods vs. Boeing in July of 2019, and Woods,  
16 Weiland vs. Boeing in September of 2021; is that right?

17 A. That is correct, sir. Sorry, this seems really  
18 loud. Yeah, they're essentially -- that does refresh my  
19 recollection. The Woods case went ongoing.

20 And at the end, they added a single plaintiff, and  
21 testimony was allowed to be introduced from prior -- from  
22 the Woods case to be applicable to Captain Weiland.

23 What I was thinking about in particular, it  
24 doesn't list Boeing on here, but I testified June 15th of  
25 2015, at the Illinois Attorney Registration and Disciplinary

1 Commission, with regard to the missing Malaysian 777. I  
2 testified in Boeing's defense that I didn't find or  
3 believe -- it was my opinion there was no problem with the  
4 subject aircraft.

5 Q. Okay. And maybe I didn't hear correctly. Was  
6 that in a disciplinary proceeding, you said?

7 A. It was. It was a hearing to establish whether or  
8 not Ribbeck Law could go forward with their lawsuit against  
9 Boeing. And after the evidentiary hearing, they were not  
10 permitted to do so.

11 Q. Okay. And that's not on the list?

12 A. Well, it doesn't list Boeing per se, but it was --  
13 you know it was essentially the allegations by the Ribbeck  
14 Law firm was that somehow Boeing was responsible for  
15 Malaysia. In fact, the aircraft hasn't been recovered and  
16 still really hasn't been, but I was put through some pretty  
17 grueling arguments about the fact that the airplane flew as  
18 intended, and we know that it did for hours until it  
19 disappeared from radar.

20 Q. I understand.

21 So that was the experience you were recalling  
22 where you may have been associated on the Boeing side of the  
23 case?

24 A. Yes.

25 Q. Thank you.

1 I just wanted to clarify. These two cases that  
2 you listed in your report, you were retained by the side  
3 that was opposing Boeing in those two cases?

4 A. That's correct. And they're really one and the  
5 same, with the addition of Captain Weiland as an add-on  
6 plaintiff. That wasn't part of the first hearing. It's now  
7 since closed and done.

8 Q. Thank you.

9 A. You're welcome.

10 Q. I believe Mr. Cassell asked you early on in your  
11 direct testimony if you were applying a scientific  
12 methodology to your opinions today. Do you recall that?

13 A. I believe he asked if my opinions were based upon  
14 a reasonable degree of scientific certainty or such  
15 language, to which I replied in the affirmative.

16 Q. Okay. Are you applying, in your own view, a  
17 scientific methodology to support your testimony today?

18 A. Well, if we could maybe dive a little deeper into  
19 what that is. I mean, there was a great -- well, the  
20 analysis that I performed in reaching my opinions was  
21 substantiated by the evidence.

22 We've referred to today primarily the two accident  
23 reports, the House Committee Report, my own fundamental  
24 training, experience, and background with respect to how  
25 aircraft are designed, and flight tested and certified, and

1 then my experience operating said aircraft for the number of  
2 years that I have.

3 Q. Understood, Captain Norton.

4 I read your report very closely before today.

5 If you look in your conclusions and opinions on  
6 5.0 there, if you have that?

7 A. I am pulling that up. Yes.

8 Q. There it says, as I understand it, please correct  
9 me if I'm wrong, that you base your opinions on your  
10 education, professional training, and industry experience;  
11 is that right?

12 A. That is correct, sir.

13 Q. I didn't see you listing a scientific methodology,  
14 but if I missed it, please let me know.

15 A. No, I think that's fair.

16 Q. Okay. Thank you.

17 And Mr. Cassell asked you about several exhibits  
18 you were shown and whether you found those exhibits to be  
19 trustworthy. Do you recall that?

20 A. I do.

21 Q. And I think in each case, you indicated that you  
22 had found the exhibits to be trustworthy. Does that sound  
23 right?

24 A. It does.

25 Q. Okay. And I was curious what methodology you

1 employed in deciding whether one of these exhibits is  
2 trustworthy or not?

3 A. As I previously mentioned, the analysis to form my  
4 opinion, the basis upon, which is whether or not the  
5 individual accident reports seem to reflect, be consistent  
6 with methodology employed in ICAO, Annex 13, which is kind  
7 of a benchmark for aviation accidents.

8 So, in my opinion, all of the protocols seemed to  
9 be followed to the best of my ability to ascertain in both  
10 reports.

11 Q. Okay. So that would apply to the two accident  
12 reports that are exhibits, right?

13 A. Yes, sir.

14 Q. Okay. But I thought you testified that other  
15 materials Mr. Cassell showed you, that were not accident  
16 reports, were, in your evaluation, trustworthy; is that  
17 right?

18 A. You would have to refresh my recollection about  
19 what specifically -- what other materials he asked about.

20 Q. Okay. I will ask you about a few, if you don't  
21 mind.

22 A. Okay. Sure.

23 Q. You said that you, in preparation for today,  
24 reviewed the testimony of Mr. Keyes, who was called earlier  
25 before the Court as a witness; do you recall that?

1 A. I do.

2 Q. Did you find the testimony of Mr. Keyes to be  
3 trustworthy or untrustworthy?

4 A. I don't believe I have information to make -- it  
5 appeared to be straightforward and trustworthy and largely  
6 consistent with my own opinions with regard to his area of  
7 expertise with FAA matters, FAA AEG matters.

8 So I've never met -- I don't know Mr. Keyes. So I  
9 wouldn't allege that anything he swore to in testimony would  
10 be not trustworthy.

11 Q. Okay. So you're saying you found Mr. Keyes'  
12 testimony to be trustworthy, is that right, or you don't  
13 know?

14 A. I mean, the testimony as a whole or would you like  
15 to direct me to specific pieces of it?

16 Q. Mr. Cassell asked you entire huge exhibits whether  
17 they were trustworthy or not. I'm asking you, what you  
18 reviewed of Mr. Keyes', did you find it to be trustworthy or  
19 untrustworthy?

20 A. It appeared to be trustworthy, yes.

21 Q. Okay. How did you go about deciding whether it  
22 was trustworthy?

23 A. I don't know that that was the basis for my review  
24 of Mr. Keyes' testimony. It was simply to review his  
25 testimony, questions, areas of his expertise that were

1 explored, and his answers to those questions based upon his  
2 knowledge, training, and expertise was primarily my approach  
3 to reviewing that testimony.

4 Q. Okay. So if I understand you, is it fair to say  
5 that you reviewed that information, but for purposes of the  
6 opinions that you are offering to Judge O'Connor, it is  
7 irrelevant to your opinion whether his testimony was  
8 trustworthy or untrustworthy?

9 A. Sir, I think it's more accurate to state that I  
10 didn't -- that that wasn't one of the benchmarks for my  
11 review. If something would have stood out as being --  
12 seeming to be factually incorrect to me or inconsistent with  
13 my own understanding of how the FAA works or other areas of  
14 Mr. Keyes' testimony.

15 As I understand the FAA to work, both from a  
16 regulatory perspective and being an operator in the system,  
17 if something would have stood out, I'm sure I could bring it  
18 to mind. No such thing happened in my review of his  
19 testimony.

20 Q. Okay. Then you testified earlier that you  
21 reviewed testimony from Miss Klein from the Forkner trial;  
22 do you recall that?

23 A. I do, sir.

24 Q. First question I have for you on that is, did you  
25 review all of her testimony, including cross-examination, or

1 only portions of her testimony?

2 A. I believe I just reviewed portions of her  
3 testimony.

4 Q. Okay. Would those have been the portions that  
5 were direct -- you understand --

6 A. I do.

7 Q. -- you're an experienced witness -- what I mean by  
8 direct?

9 A. Yes. Specifically, my attention was drawn to --  
10 for the purposes of this case and my testimony --  
11 establishing what would have been required in terms of  
12 levels of pilot training was of essence. So my attention  
13 was drawn to her testimony regarding those specific  
14 considerations.

15 Q. Thank you.

16 On direct examination, is that right?

17 A. Yes.

18 Q. Who decided what portions of her testimony you  
19 reviewed in preparation for today?

20 Was it yourself or the attorneys?

21 A. I think it's fair to say there's been so many  
22 pieces of information that it's sort of been a joint  
23 collaboration. There's been calls.

24 There's just been such a myriad of information  
25 that boiling it down to what's pertinent to my testimony has



1 sometimes been with the assistance of my attorneys.

2 Q. Did you ask to review Miss Klein's  
3 cross-examination testimony?

4 A. I don't believe I did ask, no.

5 Q. Could that be relevant to determining whether that  
6 information was trustworthy or not, in your review of the  
7 materials?

8 A. It certainly could.

9 Q. Okay. And so, do you have any opinion, as you sit  
10 here today that you offer Judge O'Connor about whether her  
11 testimony, Ms. Klein's testimony in the Mark Forkner case,  
12 was trustworthy or untrustworthy?

13 MR. CASSELL: Objection, your Honor. Could we  
14 have a more focused question? The only thing I asked about  
15 was, I think, the 18 lines in the testimony. So I think  
16 anything beyond those 18 lines is irrelevant.

17 THE COURT: Overruled.

18 THE WITNESS: Would you please ask that again?  
19 (BY MR. HATCH:)

20 Q. Yes, ma'am.

21 Do you have an opinion, as you sit here today,  
22 whether Ms. Klein's testimony that you reviewed from the  
23 Mark Forkner trial was "trustworthy" or untrustworthy?

24 A. I do not.

25 Q. You were shown some exhibits -- I'm happy to go

1 back over them with you -- but you were shown some exhibits  
2 that involve emails amongst Boeing employees; do you recall  
3 that, redacted?

4 A. I do.

5 Q. You don't have any opinion about whether those  
6 emails are trustworthy or not, is that right?

7 A. Trustworthy from the standpoint that they've been  
8 produced, that they're accurate and they represent accurate  
9 exchanges of information?

10 Is that -- I don't really know what you mean by  
11 "trustworthy."

12 Q. You used the term trustworthy with Mr. Cassell.  
13 Whatever your definition of trustworthy is, did  
14 you find those emails to be trustworthy or not?

15 A. I don't believe I said that those emails were  
16 trustworthy.

17 THE COURT: Are you saying the documents are what  
18 they are purported to be, or the statements within the  
19 documents truthful?

20 What is it that you're asking?

21 What is it you're directing the trustworthy too?

22 MR. HATCH: Thank you, Judge O'Connor. I will  
23 refine the question with your help. Thank you.

24 (BY MR. HATCH:)

25 Q. The content of those emails, not whether they came

1 from Boeing or not, but what they communicated from the  
2 participants in those emails, do you have any opinion about  
3 whether they're trustworthy or not?

4 A. Again, I think I'm sort of hung up in the same way  
5 Judge O'Connor just tried to clarify. I believe that  
6 represented an accurate exchange between the two parties,  
7 that those words were used and communicated, and that  
8 nothing in that exchange was fabricated. And that they  
9 represent the opinions and observations reflected in the  
10 communication.

11 Q. Okay. But you're not sitting here endorsing what  
12 those people were saying as correct fact, right?

13 That's fair to say.

14 A. I guess I really don't know how to answer the  
15 question. I have accepted the fact that they've been  
16 admitted into evidence as, that they're being stipulated to,  
17 that the conversation actually occurred as it's represented  
18 on paper.

19 MR. CASSELL: Your Honor, if it's helpful, we will  
20 stipulate that the communication among Boeing employees that  
21 we've introduced are accurate and trustworthy.

22 MR. HATCH: I'll move on.

23 (BY MR. HATCH:)

24 Q. And then you've reviewed the prosecution  
25 closing for the Mark Forkner case; is that right?

1 A. I don't recall if I did or not.

2 Q. I think that was an exhibit that Mr. Cassell gave  
3 you earlier.

4 THE COURT: Remember, in the exhibit --

5 THE WITNESS: Exhibit 14? Is that the Volume 4?

6 (BY MR. HATCH:)

7 Q. Yeah, Exhibit 14.

8 A. Yeah, it would actually just be easier for me if  
9 we referred to them as the exhibit numbers. Is that No. 14  
10 that you're referring to?

11 Q. Yes. Yes, ma'am. I'm not trying to trip you up.  
12 Exhibit 14.

13 A. That's okay. A lot of documents here.

14 Q. You had reviewed that before your testimony today;  
15 is that right?

16 A. I believe that I had read this once, yes.

17 Q. Okay. Did you review it before your testimony  
18 today, the defense closing in the Mark Forkner trial?

19 A. I did not.

20 Q. Okay. And you didn't ask to review that, I take  
21 it?

22 A. I did not.

23 Q. Okay. And I don't intend to get into the facts of  
24 the Mark Forkner trial, I will say that. I'm just curious  
25 what you reviewed, because you said you reviewed various

1 transcripts and other things.

2 Did you review any of the testimony of Barry  
3 St. Germain from the Mark Forkner trial, do you recall?

4 A. I do not recall that I did.

5 Q. Okay. You testified about your extensive  
6 experience as a 737 pilot on direct examination, and that  
7 would have included the time period that we've been  
8 discussing leading up to the Lion Air accident, and then  
9 post the Lion Air accident, you were flying the 737 at that  
10 time, I take it?

11 A. I was not, sir. I was a 16-and-a-half-year Airbus  
12 A319/A320 captain until leaving that fleet, requalified --  
13 in September of 2020, I went through training on the -- all  
14 the various versions of the 737 that we operate that I told  
15 you and got qualified in October of 2020 and have been  
16 operating it since then.

17 Q. I see. So had you been a 737 certified pilot  
18 prior to 2020?

19 A. Yes, I had. I had operated -- I was type-rated in  
20 it, type rated from both seats. I was initially a first  
21 officer on it back in 1996.

22 Q. It's okay to say around.

23 A. Yeah.

24 Q. Yeah.

25 A. Both -- I flew our older versions before going to

1 the Airbus, roughly, three years from each seat.

2 Q. Okay. So around 1996 you stopped flying the 737,  
3 you then move over to the Airbus, and then you come back to  
4 the 737 in 2020; is that right?

5 A. No. I went to the right seat of the -- our older  
6 737s in 1996. Operated roughly three years, maybe two and a  
7 half to three years, went to the right seat of the 757, 767.

8 And then was awarded a captain upgrade back to the  
9 left seat of the 737s in 2001, roughly, four months prior  
10 to 9/11.

11 Q. So I guess maybe another way -- when was the last  
12 time before 2020 when you said you started flying the 737  
13 again?

14 When was the last time you had flown a 737 before  
15 that, as best you can recall? Years are fine.

16 A. Probably late 2002 to early 2003.

17 Q. Okay. And as part of your training, that would,  
18 of course, have been a prior version of the 737 because the  
19 MAX, of course, hadn't been made at that time.

20 As part of your certification to become a 737  
21 pilot, did you train on the runaway stabilizer memory item?

22 A. Yes, I'm sure. It was part -- all transition  
23 training was to see, you know, all the emergency procedures  
24 at least once in a simulator and demonstrate compliance with  
25 the applicable recovery.

1 Q. Okay. And the runaway stabilizer, when I said a  
2 memory item, that means that every 737 certified pilot has  
3 to be able to perform that procedure from memory; is that  
4 right?

5 A. Parts of that procedure. The parts that we call  
6 immediate action items must be performed by memory. Once  
7 those are accomplished and the aircraft is stabilized, the  
8 checklist will typically go to a section called reference  
9 items or we call them cleanup items.

10 And then give the pilot information about if a  
11 system is lost or disabled as a result of the action items,  
12 other considerations that might be germane to getting it  
13 safely back on the ground.

14 Q. Okay. And you testified on direct -- and correct  
15 me if I misstate this; I'm going from my notes -- but that  
16 the procedure to counteract an unintended MCAS activation is  
17 to use the electric trim switches to return the plane to  
18 neutral trim, return to level flight, and then you use the  
19 stab trim cutouts to deactivate MCAS. Did I get that right?

20 A. It's not the entire procedure. I think I  
21 testified that using the electric trim was -- the procedure  
22 essentially states when the runaway trim begins to grasp and  
23 hold the control column, turn off the automation, which is  
24 the autopilot and autothrottle, and control the airplane,  
25 get it under control by virtue of manual thrust and control

1 column activation, trim out whatever forces are being  
2 applied to the aircraft.

3 And normally that is going to be by virtue of  
4 electric trim. Get it back to level flight untrim. And  
5 then, if the autopilot -- if disabling the autopilot stops  
6 the runaway trim, that's essentially the end of the  
7 procedure. And what you know because of that is that the  
8 autopilot caused the runaway trim.

9 Q. Okay. And then MCAS would not be the autopilot,  
10 right --

11 A. Right.

12 Q. -- because it's not active when autopilot is  
13 active?

14 And so, if that didn't work, then you would  
15 proceed, I take it, to cut out --

16 A. Well, then the runaway trim would continue, right?  
17 Because disabling the autopilot wouldn't help. So the next  
18 step says, if the runaway trim continues after the autopilot  
19 is disabled, then actuate the cutout switches.

20 Q. Thank you.

21 And that's the runaway stabilizer procedure you  
22 just described, right?

23 A. That is the modern-day runaway stabilizer  
24 procedure. Just to be clear, there's no procedure today  
25 that says MCAS. It is the runaway stabilizer procedure that



1 is -- basically has been recommended by Boeing is what found  
2 its way into our manuals.

3 Q. Right.

4 And not just Boeing, right? The FAA directed to  
5 use runaway stabilizer in the case of what would be  
6 unintended MCAS activation, right?

7 A. Yeah. To be clear, I just want to differentiate  
8 the fact that the previous model of runaway trim didn't talk  
9 about the necessity of or trimming off the control forces.

10 And it is essentially the same procedure, but the  
11 differentiation that -- because electric trim in a  
12 traditional runaway stabilizer, electric trim won't stop it.  
13 The stabilizer is running away --

14 Q. And I don't mean to interrupt. I can maybe help  
15 by being [sic] a more specific question.

16 A. Okay. Okay.

17 Q. I don't mean to interrupt you.

18 But what I was getting at is, after the Lion Air  
19 accident, you are aware that the FAA, through its  
20 Airworthiness Directive, directed crews to utilize the  
21 runaway stabilizer procedure to counteract what would be  
22 unintended MCAS activation; is that correct?

23 A. Yeah, I think what came first in the interim was  
24 Boeing's FCOM bulletin recommending same. And -- but it  
25 still didn't clarify that one-way pilots -- the FCOM

1 bulletin put out by Boeing didn't specifically mention MCAS.

2 It still didn't shed light on the fact there was  
3 an MCAS system on the aircraft. It just reminded -- the  
4 FCOM bulletin reminded pilots that there is a procedure for  
5 runaway stabilizer trim and outlined in the bulletin what it  
6 was, in addition to what the associated cockpit effects  
7 would be if it was accompanied by an AOA fail also or, you  
8 know, all of the things we talked about earlier. But it did  
9 not reference MCAS.

10 Q. Understood it didn't say MCAS by name, but it was  
11 referring to what had happened in the Lion Air accident and  
12 directing crews to utilize the runaway stabilizer procedure  
13 if they encountered conditions like that, right?

14 A. That's my understanding about the type --

15 Q. We can go over it all with you --

16 A. Yeah.

17 THE COURT: Hold on. Hold on. You all can't talk  
18 over each other.

19 MR. HATCH: Thank you.

20 (BY MR. HATCH:)

21 Q. Okay. Go ahead, Captain Norton.

22 A. It does reference the accident and reminds pilots  
23 to use that -- that there is a runaway stabilizer procedure.

24 What was unclear and confusing for operators like  
25 myself on the other end, and what is now clear, is that what

1 it failed to mention is that if instinctively -- when the  
2 nose pitched over and I instinctively utilize the electric  
3 trim switches to raise the nose, that runaway stabilizer  
4 trim would stop if in fact that condition was being caused  
5 by MCAS.

6 So what I'm trying to convey is it's not a  
7 one-size-fits-all. Just because there was a runaway  
8 stabilizer procedure in the book, there was no distinction.  
9 It didn't help inform my understanding or as an operator of  
10 the airplane that, if I utilized the electric trim switch  
11 and the runaway stopped, that there was a potential that  
12 five seconds later, if it was MCAS driven, that the whole  
13 sequence would start all over again. It just reiterated the  
14 existing runaway stabilizer procedure.

15 Q. Captain Norton, do you say you found it to be  
16 misleading, was that what you said?

17 A. I found it to be incomplete I think would be a  
18 better -- with the addition of the electric trim switches  
19 being able to stop the runaway stabilizer trim if, in fact,  
20 it was driven by MCAS.

21 And then informing the operator and the pilots  
22 that, five seconds later, after the resync function, it  
23 could happen again would have been much more valuable  
24 information to also include in the bulletin.

25 Q. So it's your testimony today that the FAA's

1 Airworthiness Directive was incomplete in your opinion?

2 A. No. I said Boeing's FCOM bulletin was incomplete.

3 Q. Wasn't the effect of the Airworthiness Directive  
4 to add the FCOM to flight crew manuals?

5 A. My personal understanding, and I can review the  
6 Emergency AD again, but it was just to draw attention to the  
7 fact that the FAA now knew that, in certain regime, there  
8 could be -- outside of the envelope that -- and again, it  
9 didn't reference MCAS either -- that there could be  
10 uncommanded stabilizer trim and reminding pilots that there  
11 was a procedure for that, but it also didn't -- I guess my  
12 opinion is that it essentially parroted the Boeing FCOM  
13 bulletin so that the information was consistent.

14 Q. Okay. So, if your opinion is that the Boeing FCOM  
15 was incomplete and your opinion is that the AD parroted the  
16 Boeing FCOM, then it seems to follow that you are telling  
17 the Court that the FAA AD was incomplete in your opinion?

18 A. Yes. It also did not include information about --  
19 well, it specifically did not refer to MCAS's presence on  
20 the airplane, nor did it discuss the five-second interval or  
21 the fact that the electric trim switch could stop the  
22 runaway stabilizer trim. To the best of my recollection, I  
23 have not reviewed that lately, but --

24 Q. Would you like an opportunity, Captain Norton, to  
25 review that --

1 A. Sure.

2 Q. -- and see if that refreshes your recollection?

3 A. Sure. What's the exhibit number, please?

4 Q. That's going to be at the end of Exhibit 4. I  
5 will get you a page here in a second. I believe it's  
6 page 288. It starts on page 288. Oh, I'm sorry, that's the  
7 FCOM. It's on 291.

8 A. No. 4 -- the No. 4 I have, the Exhibit 4 is the  
9 House Final Committee Report.

10 Q. Oh, I'm sorry. Exhibit 2. My apologies.

11 A. And the page number again, sir?

12 Q. If you'd like to review the FCOM, that comes  
13 first --

14 A. Right.

15 Q. -- and then the AD follows. The FCOM starts on  
16 page 288, and then the AD on page 291.

17 A. Okay. So it does -- the FCOM does refer to the  
18 restart after five seconds, which is the resync. So I was  
19 incorrect about that. Repetitive cycles.

20 Okay. I was incorrect about addressing the  
21 resync. It is in there.

22 Q. Okay. Please take your time. I think it's  
23 important whether you view anything in the FCOM or the AD to  
24 be incorrect. So please take whatever time you need.

25 And after you've had that chance, tell me if you

1 maintain the opinion that the AD is incomplete.

2 A. I think the concept that I had in my background  
3 around the FCOM was that it still didn't mention MCAS as  
4 being present on the aircraft. Although it does appear to  
5 describe accurately the resync function, as I've explained  
6 it and understand it, but it still doesn't indicate that the  
7 system is on the airplane, and for that I believe it's  
8 incomplete.

9 Q. Okay. So not trying to put words in your mouth,  
10 but as I understand you, the thing that is incomplete is  
11 that it doesn't reference MCAS by name; is that correct?

12 A. That is correct.

13 Q. But it references the effects that could occur if  
14 MCAS activates erroneously, correct?

15 A. Well, it does describe what MCAS -- it doesn't  
16 differentiate the fact that this resync function, the five  
17 seconds, is a result of MCAS and not just a runaway and  
18 doesn't emphasize that a traditional runaway stabilizer  
19 wouldn't be -- wouldn't stop with the -- by using the  
20 electric trim switches.

21 So that's incongruent with -- my training for a  
22 runaway stabilizer trim historically is that, when I hit  
23 those electric trim switches, it has no effect. The runaway  
24 doesn't stop.

25 So this was confusing to read, because if it would

1 have just called out that this is a different type of  
2 runaway trim for us, and it's caused by this system known as  
3 MCAS that would respond to electric trim, and then resync  
4 five seconds later and puts you in the same situation, I  
5 think it would have been much clearer to the operator.

6 Q. Okay. Thank you.

7 And I understand, thank you, from your earlier  
8 testimony, that you weren't flying the 37 -- 737 at the time  
9 of these events we're looking at, November of 2019, right?

10 A. That's correct.

11 Q. Or 2018, excuse me.

12 So are you aware of what are called MOMs or  
13 Multi-Operator Messages that go to the fleet?

14 A. I am, yes.

15 Q. And do you know from your own knowledge -- you  
16 weren't on a 737 at the time -- whether Boeing sent out a  
17 Multi-Operator Message describing the MCAS function in and  
18 around this time period?

19 A. My understanding, sir, is that they did. Just  
20 days -- several days later, maybe within the same week,  
21 they -- yeah, I used to help draft our MOMs for the  
22 hydraulic and brake systems. So I'm familiar with that.

23 Q. Okay. So is it fair to say within a one-week  
24 period between the FCOM AD and the Multi-Operator Message,  
25 that the fleet would have all the information you think is

1 needed to be complete and respond to an unintended MCAS  
2 activation?

3 A. Well, again, with the caveat that the FCOM and AD  
4 doesn't specifically mention MCAS, it's my recollection that  
5 the first mention of the system in referring to it as MCAS  
6 and describing it was in the MOM, the first-time operators  
7 were made aware of its existence on the airplane.

8 I don't know if I have a copy up here, but I do --  
9 it is my opinion that the information in the MOM didn't  
10 accurately reflect what was now, what I've been referring to  
11 as MCAS 2.0 vs. 1.0.

12 Because if my recollection serves -- my  
13 recollection just failed me a minute ago -- but I believe  
14 the MOM still refers to MCAS -- it introduces MCAS, but then  
15 still refers to it as operating in steep turns with elevated  
16 load factors, which doesn't accurately reflect MCAS 2.0  
17 as installed on the airplane. Rather, it reflects what  
18 MCAS 1.0 was and had been represented to FAA AEG.

19 MR. CASSELL: Your Honor, could the witness be  
20 given a chance to just flip to the next page in the  
21 document, page 290, and refresh?

22 MR. HATCH: That was my thought as well. For the  
23 record, your Honor, that's the Multi-Operator Message that  
24 we've been referring to in the same exhibit, Captain.

25 THE WITNESS: Let's turn the page. That's some



1 small writing. I think I did just accurately recall that.  
2 Embedded in the description, it reads, "The MCAS function  
3 commands nose-down stabilizer to enhance pitch  
4 characteristics during steep turns with elevated load  
5 factors and during flaps-up flight at air speeds approaching  
6 stall."

7 So we know from Lion Air, which preceded this  
8 FCOM, that this MOM is factually incorrect.

9 (BY MR. HATCH:)

10 Q. It says at elevated angles of attack, do you see  
11 that in the first paragraph, second sentence?

12 A. At elevated angles of attack.

13 Q. And it is true, you talked about the three-legged  
14 stool in your direct testimony, and then how certain  
15 revisions were made to 2.0. But elevated angle of attack  
16 always remained a requirement for MCAS activation, right?

17 A. AOA information being provided to reflect that the  
18 aircraft was at a predetermined excessive angle of attack is  
19 my understanding, but that that wasn't -- that's not the  
20 problem I have with what's written in this factual or  
21 intending to be factual description.

22 It's the next sentence which reads, "The MCAS  
23 function commands nose-down stabilizer to enhance pitch  
24 characteristics during steep turns with elevated load  
25 factors," and it continues.

1 And as you recall, those were the original  
2 parameters for what we're referring to as MCAS 1.0 that puts  
3 us in this narrow operating envelope, and that was no longer  
4 true.

5 And so, for Boeing to put this MOM out -- so when  
6 I read this as an operator, I wasn't flying the aircraft at  
7 the time, but I did read this and had friends flying the  
8 aircraft who read this, the idea was -- or their take-away  
9 was, I'm safe if I never put the aircraft into a steep turn  
10 or an elevated load factor. And I'm not in the business of  
11 doing that when I fly people around so I cannot worry about  
12 this and go back to bed.

13 Q. The MOM would go to the entire fleet, is that  
14 right, to your knowledge?

15 A. It should say. That is my understanding, but in  
16 addition to -- well, it actually is pretty succinct. It  
17 says, "This message is sent to all 737NG/MAX customers,  
18 regional directors, regional managers, and Boeing field  
19 service bases."

20 Q. And to your knowledge, would that include foreign  
21 customers of the MAX?

22 A. It says, "All customers." So I would take Boeing  
23 at their word.

24 Q. Okay. And you were asked a lot of questions  
25 before about whether the AEG knew about low-speed MCAS after

1 the Lion Air accident; do you recall that?

2 A. I do.

3 Q. Do you have any belief that the AEG would not have  
4 known about low-speed MCAS by the time of the Ethiopian Air  
5 accident the following year?

6 A. Again, I can't testify to what the AEG knew and  
7 when they knew it. But I think that a review -- the review  
8 of the system that was ongoing, and then looking at the data  
9 from Lion Air, which they certainly would have had by then,  
10 it would show them that MCAS apparently fired at low speeds  
11 or at speeds outside of what their expectation was after  
12 certification.

13 Q. And you testified that you reviewed the DPA  
14 Statement of Facts, I believe, on direct examination?

15 A. I have reviewed that, yes.

16 Q. And you're aware that that's factual information  
17 that the courts accepted as part of these proceedings,  
18 right?

19 A. That is my understanding. Yes, sir.

20 Q. And do you recall that paragraph 49 of that  
21 Statement of Facts, says, "Following the Lion Air crash, the  
22 FAA AEG learned that MCAS activated during the flight and  
23 may have played a role in the crash. The FAA AEG also  
24 learned for the first time about MCAS's expanded operational  
25 scope."

1           A.    I don't have it in front of me, but I have no  
2           reason to believe -- I just don't know. It says, "after the  
3           Lion Air crash." So I don't know what period of time it's  
4           specifically referring to.

5           Q.    Sure.

6                    I will just represent to you that I'm reading from  
7           that.

8           A.    Sure.

9           Q.    I'm happy to show it to you, if you want.

10                   There's no doubt in your mind by the time of the  
11           Ethiopian Air accident several months later that the AEG  
12           would have had information that MCAS had expanded to low  
13           speed, right?

14           A.    I don't know that they were specifically told as  
15           much or -- you know, again I think there are people who can  
16           speak to what the FAA knew and when they knew it better than  
17           I in this courtroom, but I do know that they were embarking  
18           upon beginning the process of trying to understand what had  
19           gone awry with the system.

20           Q.    Okay. In that period, the only action that the  
21           AEG took for the fleet with regard to training was to issue  
22           the AD we have discussed that referenced the runaway  
23           stabilizer procedure; is that right?

24           A.    That is my understanding.

25           Q.    Okay. And do you know how the AEG decided that

1     referencing the runaway stabilizer procedure was the  
2     appropriate response in that period?

3           A.     Again, I can't speak to their mind-set. I would  
4     assert from my knowledge of system failures on the airplane,  
5     having flown prior versions and understanding what I did as  
6     a person, not flying the MAX at that time, that it was the  
7     closest procedure.

8           MCAS does, in fact, direct a runaway trim or  
9     result in a runaway trim when it fires uncommanded. You  
10    know, activates in an uncommanded matter. So it's the  
11    regular runaway stabilizer trim procedure was as close as  
12    you could probably come.

13          Q.     Okay. But if I wanted to know why they decided to  
14    do that, should I ask the AEG?

15          A.     Yes.

16          Q.     Okay. And you don't know what information the AEG  
17    had in front of it when it decided to issue that AD, right?

18          A.     I don't. I didn't at the time. I mean, I've been  
19    provided with what we're referring to as Exhibit 7 that sort  
20    of outlines in that period of time between the two crashes  
21    what the FAA was working on as they begun their process to  
22    try and understand and quantify the effects of MCAS as it  
23    applied to Lion Air.

24          Q.     You just told me you don't even know whether they  
25    knew about low-speed MCAS at the time they issued the AD; is

1 that right?

2 A. I think what I said is they had the data at that  
3 point, it would be my understanding. It would bear out the  
4 fact that MCAS apparently fired at low speed and not in this  
5 upper corner of the envelope that they had been reasonably  
6 expecting when the aircraft was certified.

7 I don't know that Boeing specifically went to them  
8 and told them that or they were able to glean from the  
9 flight data recorder -- digital flight data recorder and all  
10 the information that was eventually made available.

11 Q. Do you know how many people at the AEG would have  
12 participated in making the decision that the AD was the  
13 correct action at that time?

14 A. How many individuals from the AEG would have  
15 participated?

16 Q. Yes, ma'am.

17 A. I do not.

18 Q. I need to ask the AEG that; is that right?

19 A. That would be where I would start if you wanted  
20 the answer, yeah.

21 Q. Thank you.

22 And you have not ever worked for the FAA yourself;  
23 is that right?

24 A. Only in the capacity as a DER, an authorized  
25 representative acting in their capacity, but not directly

1 for the FAA.

2 Q. Right.

3 You, in that role, are employed by a private  
4 company but perform a delegated function on behalf of the  
5 FAA; is that right?

6 A. That's correct.

7 Q. Okay. But never have you worked for the FAA AEG  
8 office; is that right?

9 A. That's correct.

10 Q. And never have you participated in making pilot  
11 training decisions for the FAA AEG; is that right?

12 A. That's correct.

13 Q. Okay. Do you know what processes and procedures  
14 the FAA AEG undertakes in order to make a pilot training  
15 decision?

16 A. Well, my 30,000-foot view is they gather all of  
17 the relevant information regarding the system in question or  
18 component in question, determine to the best of their  
19 ability the appropriate failure modes and categories, decide  
20 whether or not those failure modes have nil effect up to a  
21 catastrophic effect, and taking into consideration all of  
22 those facts, then determine what level of training would be  
23 required for pilots to operate the aircraft.

24 Q. But you don't know specifically how they evaluate  
25 that information in order to decide whether Level B is

1 appropriate, C or D, right?

2 A. Well, not to any degree that I didn't just  
3 explain. I believe my experience back when I was a DER and  
4 an engineer attending meetings, trying to decide the basis  
5 for that which would be a functional hazard analysis or a  
6 fault tree analysis or a failure modes effect analysis, I  
7 knew inherently what would happen after we have provided  
8 that data, because that would help the FAA AEG's  
9 determination for training.

10 Q. Right.

11 So you put information into the FAA, but you don't  
12 know how the FAA, in turn, evaluated that information to  
13 render its ultimate result, right?

14 A. Correct.

15 I think it's fair to characterize that we got to  
16 sit in the meetings where it was presented and help them  
17 understand it but weren't necessarily a party to their  
18 subsequent evaluations and determinations.

19 Q. And if I wanted to know how the FAA AEG would make  
20 a training decision, should I ask the FAA AEG?

21 A. For a specific case, yes. I mean, I think I  
22 understand where you're going. I mean, there are categories  
23 of -- there are only so many determinations you can make,  
24 right?

25 There's only five levels of training, A through E.



1 And they're pretty distinct cutoff points that are industry  
2 recognized, you know? A benign effect to a minor effect to  
3 a major, to a -- you know, all the way to a catastrophic,  
4 those decisions are going to be made, by my understanding as  
5 a DER, essentially in the same manner based on risk,  
6 category of risk.

7 Q. And do you know whether the FAA AEG would  
8 collaborate with others within the FAA, including the  
9 certification office, in making a training decision and  
10 gathering data?

11 MR. CASSELL: Objection, your Honor. I think now  
12 that's starting to disagree with the agreed Statement of  
13 Facts, that there were two separate offices within the FAA  
14 that were not interacting on these particular decisions.

15 THE COURT: Overruled.

16 Do you know?

17 THE WITNESS: I do not know.

18 MR. HATCH: Thank you.

19 Just for the record, your Honor, Boeing is not  
20 disagreeing with the Statement of Facts.

21 THE COURT: Just go ahead and ask your next  
22 question.

23 MR. HATCH: Thank you.

24 (BY MR. HATCH:)

25 Q. Do you know -- the Judge asked you about the FAA

1 not communicating earlier, and you talked about the post  
2 Lion Air accident period of time.

3 Do you know as a fact that Boeing told the FAA  
4 certification office about low-speed MCAS during the  
5 certification process of the MAX?

6 A. That has been represented to me. I have never  
7 read any -- again, it was represented to me that that may  
8 have occurred or that the ACO may have been given  
9 information.

10 However, I was told that the scope of my testimony  
11 was going to be limited to the AEG with regard to making a  
12 pilot training determination.

13 Q. You said that was represented to you. You don't  
14 recall reading that in the DPA itself?

15 A. You know, sir, I'll be honest, if it's in there,  
16 or -- probably in the beginning, it doesn't stick out. I  
17 know that -- I know that I know it from either being told or  
18 reading a one-liner somewhere.

19 But essentially, I was told the bigger issue and  
20 that's going in my mind is that's not what I'm here to talk  
21 about or to represent or attest to or have an opinion about.

22 Q. Okay. If I represented to you that that is in the  
23 DPA, I will just represent that to you, that doesn't change  
24 any opinions you're offering today?

25 MR. CASSELL: Your Honor, could we have a

1 paragraph reference for that representation?

2 THE COURT: Well, just if it is, does it change  
3 any of your opinions?

4 THE WITNESS: No, it really doesn't.

5 THE COURT: Okay. All right. Go ahead.

6 (BY MR. HATCH:)

7 Q. Now, you testified on direct examination that it  
8 was, in your view, a necessary part of Boeing's conspiracy  
9 to hide the facts of MCAS from foreign regulators. Do you  
10 recall that?

11 A. I recall being asked that and answering in the  
12 affirmative, yes.

13 Q. Okay. And do you know that Boeing disclosed MCAS  
14 to foreign regulators?

15 Were you told that fact? Prior to certification?

16 A. Disclosed that MCAS was aboard the aircraft to  
17 foreign regulators?

18 Specifically, who are we talking about?

19 Q. I'm asking you if anyone told you that Boeing did  
20 disclose to foreign regulators MCAS prior to certification?

21 THE COURT: Do you know?

22 THE WITNESS: I do not.

23 THE COURT: Okay.

24 (BY MR. HATCH:)

25 Q. Your opinion is that Boeing had to cover that up

1 to foreign regulators.

2 Would it change that opinion if, in fact, Boeing  
3 did disclose MCAS to foreign regulators prior to  
4 certification?

5 MR. CASSELL: Your Honor, at this point I'm going  
6 to object. This question is predicated on facts that are  
7 nowhere in the record in this case.

8 THE COURT: Okay. Hypothetically speaking, would  
9 that change your opinion?

10 THE WITNESS: It would. To the degree that it  
11 might inform a different understanding, I would have to  
12 know, not just that MCAS was "disclosed" or that anyone was  
13 told it was aboard the aircraft, but the degree to which it  
14 was described, detailed, all the information about its  
15 functionality and potential failure modes, that --

16 (BY MR. HATCH:)

17 Q. And you haven't been given that prior to  
18 testifying today; is that right?

19 A. I have no information that reflects that, no.

20 Q. Okay. You testified as part of your opinion that  
21 the FAA's directions are followed by foreign regulators; do  
22 you recall that?

23 A. I do.

24 Q. They don't have to be followed by foreign  
25 regulators; is that right?

1 A. That's correct.

2 Q. And, in fact, the emails that Mr. Cassell reviewed  
3 with you, Exhibits 5 and 6, they show that foreign  
4 regulators were considering making a different decision,  
5 right?

6 A. I believe I reviewed some emails that showed that,  
7 while they were making -- while they were evaluating the  
8 system on their own, they asked Boeing, asked Mr. Forkner  
9 directly to provide more information about why only Level-D  
10 training was appropriate in his opinion while they were  
11 trying to make their own determination.

12 Q. So Exhibits 5 and 6, which I think you have in  
13 front of you, if you would like to refer to them, those  
14 emails actually show that foreign regulators can make their  
15 own decisions, right?

16 A. I would have to review those to look at -- I mean,  
17 they certainly can. What my testimony and what my opinion  
18 is --

19 THE COURT: Well, hold on. Hold on.

20 Go ahead. Ask your next question.

21 (BY MR. HATCH:)

22 Q. Just to be clear, you have never worked for a  
23 foreign aircraft regulator, correct?

24 A. I have not.

25 Q. And you never were responsible for making training

1 content decisions for foreign aircraft regulators, correct?

2 A. Well, I participated in content that was part of  
3 the aircraft flight manual that eventually, if a foreign  
4 regulator's carrier was operating our aircraft, I had  
5 participated in providing some of that material specific to  
6 the airplane.

7 Q. Sorry.

8 A. Yeah.

9 Q. As it relates to the training -- appropriate  
10 training level, you never participated in a decision of that  
11 nature, correct?

12 A. That's correct.

13 Q. Okay. And you talked about there were proprietary  
14 aspects of your own training for the U.S.-based company that  
15 you work for; is that right?

16 A. Well, in any business relationship, there are  
17 proprietary information about my company that I'm not here  
18 to testify to, yes.

19 Q. It seemed you were being careful to say, we have  
20 proprietary aspects of our training and I'm not going into  
21 those, right?

22 A. That's fair.

23 Q. All right. And I assume your competitors have  
24 proprietary aspects to their training as well, right?

25 A. I would agree.

1 Q. And you would not be privy to how your competitors  
2 train their pilots in those proprietary respects, right?

3 A. Not unless I had compadres at my competitor's  
4 airline.

5 Q. Okay. How about Indonesian Airlines?

6 A. No information.

7 Q. Ethiopian Airlines?

8 A. No information.

9 Q. Okay. Thank you.

10 I'm getting close. Thank you, your Honor.

11 Captain Norton, you're not here today to offer to  
12 the Court any opinion on proximate causation; is that right?

13 MR. CASSELL: Objection, your Honor. That calls  
14 for a legal conclusion.

15 THE COURT: Do you know if you're here --

16 THE WITNESS: I would have to ask -- your Honor, I  
17 would have to ask somebody to define that legally for me to  
18 be able to answer.

19 THE COURT: Yeah, I think she's here to testify  
20 about -- she lays out the opinions that she's here to  
21 testify to.

22 (BY MR. HATCH:)

23 Q. Right.

24 And the opinion I read in your report was but-for  
25 causation; is that accurate?

1                   That was the term that you used.

2           A.     In my third opinion and conclusion, that is the  
3 term I used, yes.

4           Q.     Thank you.

5                   Captain Norton, you've never been previously --  
6 you have testified as an expert previously in court. You  
7 have testified to that, but have you ever been qualified to  
8 testify as an expert as to the AEG's training  
9 determinations?

10          A.     I have not.

11          Q.     And no court has ever qualified you to testify  
12 regarding the FSB's determination about appropriate training  
13 level; is that right?

14          A.     That's correct.

15          Q.     And has any court qualified you to testify about  
16 the internal processes and procedures of the FAA?

17          A.     That's a little broad. Only within the scope of  
18 my having worked as a DER, or what my understanding is as I  
19 operate in the environment. I don't know if that's fair.

20          Q.     In other words, what your experience has been  
21 interacting with the FAA, you may have testified to that,  
22 but you haven't testified as to how the FAA internally works  
23 because you never worked there, right?

24          A.     That's -- I agree.

25          Q.     Thank you.



1 I take it no court has ever qualified you to  
2 testify as to the processes and decisions of foreign  
3 aircraft regulators on training, right?

4 A. Only insofar as -- not to testify. Just to  
5 analyze, you know, whether or not --

6 THE COURT: Okay. Hang on one second.

7 (BY MR. HATCH:)

8 Q. Just one minor point of clarification I want to go  
9 back to, Captain Norton.

10 When you talked about the prior testimony you gave  
11 before the ARDC in a matter that involved Boeing, do you  
12 recall that in 2015?

13 A. I do.

14 Q. Is it correct that you were called by the ARDC and  
15 not by Boeing in that case?

16 A. That is correct.

17 Q. Okay.

18 MR. HATCH: Thank you, your Honor.

19 Thank you, Captain Norton. No further questions.

20 THE WITNESS: Thank you.

21 REDIRECT EXAMINATION

22 (BY MR. CASSELL:)

23 Q. Let me just cover a few questions that the  
24 government asked you about. Actually, a lot of questions  
25 about the Statement of Facts and the operating scope that

1 MCAS would fire at. Do you remember those questions?

2 A. I do.

3 Q. And if the FAA AEG had learned about the expanded  
4 operating scope, particularly the speed component, would  
5 that have triggered any additional review processes by the  
6 FAA AEG in your opinion?

7 A. My strong opinion is that it would have. And it's  
8 also represented in the Statement of Facts that Mr. Forkner  
9 understood as much. I believe that's in paragraph 34.

10 Q. And that's the paragraph where it indicates that  
11 Forkner and Gustavsson understood that it was their  
12 responsibility to update the FAA AEG about any relevant  
13 changes to the 737 MAX flight controls?

14 A. That's correct, sir.

15 Q. Such as the MCAS's expanded operations?

16 A. Correct.

17 Q. Now, I think you were shown the shocker alert  
18 email that has been the attention of a number of hearings.  
19 There's a phrase in there about, "Trimming itself like  
20 crazy." I think Forkner describes the simulator as,  
21 "Trimming itself like crazy."

22 Could you tell us, based on your training and  
23 experience, what you understand that to be a reference to?

24 A. I believe the whole reference, if my recollection  
25 serves -- again, hopefully -- was at 4,000 feet, 230 knots,

1 the simulator was trimming itself like crazy.

2 That would be a reference to the spinning wheel,  
3 the trim wheel itself just continuing to run and trimming  
4 the nose down.

5 And when, you know, the verbiage "like crazy" to  
6 me is consistent with his above communication a couple lines  
7 earlier that said it was running rampant.

8 Q. And "trimming itself like crazy," would that have  
9 any application to the two crashes that we've been  
10 discussing here today?

11 A. It certainly would. It was indicative of the fact  
12 that MCAS's system was operational at those low airspeeds,  
13 230 knots is a very low airspeed, probably .3 Machish or  
14 something in that range. That's why I believe Mr. Forkner  
15 didn't understand why it was operational, because it  
16 shouldn't have been.

17 THE COURT: Wait. So you mean the resync every  
18 five seconds? Is that what you're talking about?

19 THE WITNESS: No, sir. The fact that the aircraft  
20 was at such a low speed and the simulator was only at  
21 4,000 feet above ground level and doing 230 knots. We're  
22 allowed to do 250 below 10,000 feet, and then we accelerate  
23 to our much higher airspeeds, 300 plus knots.

24 He was only doing 230 knots, yet that trim wheel  
25 was continuously spinning, and the system was running

1 rampant on him, and he couldn't figure out, especially  
2 because of not being in the upper envelope, being at a  
3 normal flying regime and at a relatively low speed, why it  
4 was doing so.

5 THE COURT: When you say, your interpretation of  
6 him saying "it runs rampant," meaning it's firing?

7 THE WITNESS: And firing and firing and firing.

8 THE COURT: Yeah.

9 THE WITNESS: The trim wheel --

10 THE COURT: That's what happens?

11 THE WITNESS: -- is just continuing to spin.

12 That's my understanding.

13 MR. CASSELL: Could we provide Exhibit 7 to the  
14 witness?

15 THE WITNESS: I have it.

16 (BY MR. CASSELL:)

17 Q. You have it?

18 So I'll represent for the record this is a  
19 continued airworthiness notification to the international  
20 community from the FAA dated March 11th, 2019. That's one  
21 day after the Ethiopian Air crash?

22 A. That's correct.

23 Q. Now, I believe we have both Mr. Jacobs and  
24 Mr. Hatch say that the only thing the FAA was doing in this  
25 interim period of time between the two crashes was issue an

1 Emergency Airworthiness Directive.

2 A. That's correct.

3 Q. Were those representations to the Court accurate?

4 A. No, they were not. And I was -- unfortunately --  
5 I was trying to respond to that. But there are, in addition  
6 to the Emergency AD, there were four other things that the  
7 FAA put out to the community that it had already done in  
8 support of its continued examination of MCAS.

9 They had validated that the airplane maintenance  
10 functional check instructions on the AOA vane replacements  
11 were adequate.

12 They had conducted simulator sessions to verify  
13 the operational procedures called out in the AD.

14 They had validated the AOA vane -- that's check  
15 calibration procedures -- to be adequate.

16 And they had reviewed Boeing's production  
17 processes related to the AOA vane and MCAS system.

18 Q. So those were things the FAA had done in the  
19 interim period.

20 Were there additional investigative steps that  
21 were still ongoing at the time of the Ethiopian Airlines  
22 crash?

23 A. There were many.

24 Q. And could you just recount briefly what those are?

25 A. Well, the FAA stated to the international

1 community that they intended to complete enhancement of the  
2 flight control system, which would provide reduced reliance  
3 on the procedures associated with required memory items and  
4 anticipated mandating these changes by a subsequent AD that  
5 would come no later than April of 2019 and outline that the  
6 design changes would include -- these are all relative to  
7 MCAS -- activation enhancements, AOA signal enhancements,  
8 and maximum command limit.

9 Additionally, Boeing plans to update the training  
10 requirements and flight crew manuals to go with the MCAS  
11 design change, including the AFM, and the flight crew  
12 operations manual.

13 Q. Let me stop you right there, because I think  
14 that's salient to what we've been talking about today.

15 So if I understand correctly, the FAA AEG had  
16 received from Boeing proposed updated training requirements  
17 regarding MCAS that they were reviewing at that time?

18 A. That's my understanding, sir.

19 Q. And sadly, I guess that review had not been  
20 completed by the time of the Ethiopian Airlines crash?

21 A. This was dated one day prior to that crash.

22 MR. CASSELL: And your Honor, I think it might be  
23 relevant to note for the record we've heard some information  
24 about the Forkner case.

25 I will represent that, in paragraph 36 of the

1 Forkner indictment written by the Justice Department, that  
2 on or about March 10th, 2019, while the FAA AEG was still  
3 reviewing MCAS, the FAA AEG learned about the Ethiopian  
4 Airline, Flight 302.

5 THE COURT: Okay. We're going to take about --  
6 we're going to take a break now. Let's come back at 3:15.  
7 I may or may not be done, but hopefully close to being done.  
8 So about an hour and 15 minutes. I do need these front  
9 tables.

10 MR. CASSELL: Okay. Thank you, your Honor.

11 (The proceedings adjourned at 2:00 p.m.)

12 (Court reconvened at 3:31 p.m.)

13 THE COURT: Okay. Please be seated. All right.

14 MR. CASSELL: And your Honor, just for the Court's  
15 benefit, we've excused Dr. Storesund. We don't think we  
16 need him.

17 THE COURT: Okay.

18 MR. CASSELL: I anticipate about five more minutes  
19 of questions.

20 THE COURT: Okay. Very good. Thank you.

21 MR. CASSELL: I did want to clarify the record, at  
22 one point, make an apology to Mr. Hatch. In the heat of the  
23 moment, right before we took a break, I suggested that one  
24 of his questions was misrepresenting facts to the Court. I  
25 want to withdraw that allegation. That was my mistake. I

1 just wanted to clarify the record on that point.

2 THE COURT: Is that acceptable?

3 MR. HATCH: Yes. Thank you.

4 THE COURT: Okay. Thank you.

5 BY MR. CASSELL:

6 Q. All right. Just a few more questions here,  
7 Captain Norton. Let's say, I got more questions crossed out  
8 than written. Here we are.

9 We've heard some testimony about how the day  
10 before Lion Air, Flight 610, crashed, there was -- the same  
11 plane was able to be successfully landed, even though there  
12 were some improper MCAS activations?

13 A. Yes, that's correct.

14 Q. Could you tell us, in your opinion, why that  
15 flight ended successfully, whereas the flight the next day  
16 did not?

17 A. Well, what I do know is factuals, that there was  
18 actually a third Lion Air pilot aboard that aircraft riding  
19 in the cockpit jumpseat.

20 And it is my understanding that that individual  
21 was the pilot responsible for speaking up and suggesting  
22 that the stabilizer trim cutout switches be effected that  
23 the stab trim be cut out.

24 I certainly wasn't in the cockpit, but that's my  
25 understanding is that neither of the actual flying pilots,



1 the captain or the first officer, took that action. That  
2 action was taken at the recommendation of the jumpseating  
3 pilot.

4 Q. And there was no third jumpseating pilot the next  
5 day aboard Lion Air?

6 A. That's correct.

7 Q. In fact, that's kind of an unusual setup, as I  
8 understand it, for the 737 MAX to have an independent  
9 jumpseat pilot like that?

10 A. It's not necessarily rare. The jumpseat exists so  
11 that it can be used by commuting pilots or pilots giving a  
12 line check, which was not my understanding of the scenario.

13 It's just that there was an additional Lion Air  
14 pilot riding that day and provided what I would consider a  
15 wider view of what was happening in the cockpit than maybe  
16 the two -- the captain and the first officer might have been  
17 able to come to on their own with regard to what was  
18 happening in the cockpit.

19 So I think it was certainly worth mentioning. And  
20 it's a differentiator from both of the accident aircraft.

21 Q. So I think in the record at this point we've heard  
22 about three flights that had improper MCAS activation: Lion  
23 Air the first day, Lion Air the second day, and Ethiopian  
24 Airlines, 302.

25 What was the success rate then of the pilots

1 responding to improper MCAS activation in those three  
2 flights?

3 A. Well, quite frankly, only one of those three  
4 flights was brought to a successful conclusion. So, if  
5 you're looking for a percentage, that's 33 and a third  
6 percent success rate.

7 And quite frankly, we only got there with the help  
8 of a dead-heading pilot on the successful aircraft, so --

9 Q. I want to turn now to the subject you were  
10 cross-examined about. I think you were asked some questions  
11 about whether foreign regulators in theory could have  
12 arrived at a different training determination about the  
13 kinds of training that would be needed on the 737 MAX.

14 A. They certainly could have. It's within their  
15 authorization to have arrived at a separate conclusion.

16 Q. In practice, in the real world, is that a common  
17 occurrence?

18 A. I have never been made aware of such an exception  
19 in practice. And to the best of my extensive knowledge over  
20 my career, I've seen regulators from foreign countries  
21 follow the extremely persuasive lead of the FAA because  
22 they're frankly recognized as the leaders of the  
23 international aviation regulatory community.

24 So their influence is quite persuasive. I think  
25 we read testimony earlier that suggested that Boeing knows

1 that as well.

2 Q. I want to follow up on another point too. Once  
3 Boeing committed its crime, was it a foreseeable consequence  
4 that the training levels that the FAA AEG would recommend  
5 would end up being inadequate?

6 A. That was foreseeable.

7 Q. And is it a foreseeable consequence of inadequate  
8 training recommendations from the FAA AEG that there is a  
9 risk of catastrophic safety hazards occurring?

10 A. That was foreseeable as well.

11 Q. And just one last set of questions.

12 I think, at the end of cross-examination, we've  
13 heard that you have never worked for the FAA AEG?

14 A. That's correct.

15 Q. Is that necessary for you to work for that  
16 particular agency to make informed opinions about the levels  
17 of training that they would be recommending?

18 A. I don't believe it is, sir. I believe my 34-plus  
19 years of experience in the industry, ranging from working as  
20 an engineer and airframe certification and eventually  
21 obtaining a DER status, as well as my to-date experience  
22 working within the regulatory framework gives me more than  
23 enough experience to opine about what the FAA would have  
24 ordered with regard to pilot training.

25 MR. CASSELL: One second, your Honor.

1 That's it for us, your Honor.

2 MR. JACOBS: Nothing, your Honor. Thank you.

3 MR. HATCH: Nothing further, your Honor.

4 THE COURT: Okay. Ma'am, you may step down.

5 THE WITNESS: Thank you, your Honor.

6 THE COURT: Any other witnesses?

7 MR. CASSELL: At this point, your Honor, we have  
8 no other expert witnesses. We do renew our motion for  
9 access to government files and so forth at this time --

10 THE COURT: Very good.

11 MR. CASSELL: -- that's pending.

12 MR. JACOBS: Sorry, your Honor. The question is?

13 THE COURT: Do you have any witnesses?

14 MR. JACOBS: Oh, no, your Honor. Thank you, your  
15 Honor.

16 MR. HATCH: No witnesses, your Honor.

17 THE COURT: Okay. So why don't you take no more  
18 than 10 minutes to present final argument.

19 Mr. Cassell, I will give you no more than 10  
20 minutes and 15 minutes and 15 minutes, and then you can  
21 rebut with 10 minutes at the very end.

22 MR. CASSELL: And so, do you want argument on -- I  
23 think the government at one point suggested they were going  
24 to raise a Daubert motion. We haven't seen that Daubert  
25 motion.

1 THE COURT: Yeah. Just on the issue of whether  
2 you are crime victims and whether you believe you have  
3 established the necessary factual premise to determine --

4 MR. CASSELL: All right.

5 THE COURT: -- whether you fit within the  
6 definition of 3771 or whatever it is.

7 MR. CASSELL: Right. Well, thank you, your Honor.

8 We believe that we have. And let me just begin,  
9 for purposes of preserving the record, I want to be clear,  
10 if for some reason my argument falls short today, I would  
11 think the only reason that we're falling short is there's a  
12 vast amount of information sitting in the government files.

13 We got hints and bits and pieces of it during the  
14 proceedings today that would support our position. So, if  
15 for some reason we have fallen short of our burden of proof,  
16 then we think, at that point, the next proper step for your  
17 Honor would be to direct the government to be fully  
18 transparent about what information it has on the crime  
19 victim issue, but we don't think that that is necessary.

20 We respect your Honor's ruling from July 27th,  
21 which I thought laid out a number of excellent points.  
22 Particularly, the conclusion of your opinion said, if the  
23 victims can prove up chain and causation, then at that point  
24 they very well could establish that they are crime victims  
25 protected by the Crime Victims' Rights Act.

1           You know, you had different bullet points and so  
2       forth. We think those crystallize into three points. The  
3       first point is whether the FAA AEG, if Boeing's crime would  
4       not have been committed, would have ordered Level-D  
5       training.

6           Let's talk about that first. I guess we've heard  
7       about three different steps today. How do we know the  
8       FAA AEG would have ordered Level-D training? I thought  
9       Captain Norton did an excellent job today in covering that  
10      particular point.

11          I think you recall, at the end of her opinion, I  
12      ran through a series of bullet points, seven or eight  
13      different reasons all underlying that conclusion. We know a  
14      year later the FAA AEG did order Level-D training.

15          We think that point was proven today by Captain  
16      Norton, but in the interest of redundancy and being safe for  
17      our clients, we did the same thing three weeks ago with  
18      someone who has 34 years of experience in the FAA,  
19      Christopher Keyes. You recall his testimony. Both coming  
20      to the same conclusion. So we have two routes to that  
21      conclusion, that the FAA AEG would have ordered Level-D  
22      training.

23          I will be interested when we hear the government's  
24      story. Remember, they were in this very courtroom a few  
25      months ago telling 12 jurors, hey, if the FAA AEG had

1 learned all the information, they would have ordered Level-D  
2 training.

3 So I'm hoping that we won't have unnecessary  
4 cross-currents from the government on that, because that  
5 should be their position in this courtroom today, just as it  
6 was five months ago.

7 Let's go to the second point then. If the FAA AEG  
8 had ordered Level-D training, would that have carried over  
9 to the foreign carriers and in particular Lion Air and  
10 Ethiopian Airlines?

11 Here again, we have two routes to that conclusion.  
12 We had Chris Keyes three weeks ago, we had Captain Norton  
13 today, both opining on exactly that point.

14 Really, one of the things I think we should recall  
15 in assessing this issue, as well any others, the testimony  
16 we heard from those two expert witnesses is un- -- what's  
17 the right word -- unrebutted at this point.

18 There's no conflicting evidence in the record. So  
19 it's not as if, you know, Chris Keyes said something and  
20 then Boeing's witness said the opposite, and now you got to  
21 figure out who's got the better of the argument.

22 We gave you two witnesses, Keyes and Captain  
23 Norton, that both said, look, the FAA is the gold standard.  
24 That's something that I don't think either side have  
25 contradicted. It would be interesting to see what the

1 government says about that.

2 I would hope they would be standing up for what is  
3 generally regarded as the premier aviation regulatory  
4 authority in the world, the FAA. And once the FAA AEG  
5 reached training determinations about an  
6 American-manufactured, American-marketed, American-produced  
7 aircraft, The Boeing Company 737, as a practical matter,  
8 that was setting the training levels for regulators around  
9 the world, including, in particular the Indonesian and  
10 Ethiopian regulators who are interested here.

11 How do you know that? You have the accident  
12 reports from both of those aircraft. And you know that the  
13 training that those pilots received on MCAS was the same as  
14 the FAA AEG is recommending.

15 In fact, it couldn't be any other way. Let's talk  
16 about the first crash, Lion Air. There wasn't information  
17 out about MCAS at that point. So, of course, those pilots  
18 were up against the beast that they knew nothing about,  
19 because Boeing's conspiracy had successfully concealed that  
20 from the FAA AEG.

21 I think this is, again, kind of an obvious point.  
22 I guess we may hear some bickering from the other side on  
23 this, but once Boeing had covered up this information from  
24 the FAA AEG, saving themselves millions and millions of  
25 dollars by this training recommendation, are they going to



1 run around and disclose that information to the other  
2 regulators? No.

3 What do they know the other regulators are going  
4 to do? I think it's Exhibit 5, Exhibit 6 that we went  
5 through today. Boeing employees, other regulators tend to  
6 defer to what the FAA does. That's --

7 I don't know that that can really be genuinely  
8 disputed. It certainly hasn't been disputed in this case to  
9 this point. So the second link in the chain is there.

10 And then the last link is, I think in some ways,  
11 the easiest one. If the pilots on those planes had been  
12 properly trained, are they able to safely land those planes?  
13 Yes. And that's what the training is all about.

14 You heard Captain Norton reach that conclusion.  
15 Chris Keyes reached the same conclusion three weeks ago. So  
16 again, we have two witnesses getting you to the same  
17 destination. Those planes land safely if those pilots had  
18 been given a fighting chance, if they had been told what  
19 they were up against.

20 Unfortunately, due to Boeing's crime, they didn't  
21 have a fighting chance. They didn't know what they were up  
22 against. And those two planes crashed, and the victims'  
23 families and others suffered direct and proximate harm.

24 I've used the phrase which your Honor is obviously  
25 familiar with. There's the but-for aspect of it. We've

1 spent a lot of time establishing but-for causation.

2 The foreseeability point obviously needs to be  
3 established as well, but in some ways that's the proverbial  
4 slam dunk. When you lie to safety regulators about a  
5 particular feature on an aircraft that ultimately causes the  
6 crash, that's the very definition of foreseeability.

7 Our briefing, I would direct your attention, your  
8 Honor, to our reply brief, where we talk about the generous  
9 interpretations that the Fifth Circuit has given to  
10 foreseeability. They cited the article in the Texas Law  
11 Review by the professor, whose name is eluding me just this  
12 second, essentially the point is, with regard to  
13 foreseeability, when the kinds of risk you are creating  
14 ultimately materializes, that's enough, in essence, to  
15 establish foreseeability.

16 And here, when you're lying to regulators as  
17 Boeing did about MCAS, that's creating a very real risk, a  
18 foreseeable risk that those planes are going to end up  
19 crashing.

20 So direct and proximate harm has been established.  
21 That means the families who are here today and many others  
22 like them represent victims of a federal crime. They are  
23 entitled to their rights under the Crime Victims' Rights  
24 Act. The rest of the arguments we make we think fall like a  
25 set of dominoes.

1                   They had a right to confer with these prosecutors  
2 about how this case was going to be disposed. And your  
3 Honor has very carefully gone through the ramifications of  
4 the CVRA, when does it activate and so forth.

5                   In the context of this case, where the Justice  
6 Department had a deal that was wrapping up the criminal  
7 liability for Boeing, at that point in time, before they  
8 presented it to your Honor, they needed to talk to 346  
9 families around the globe about what that disposition is.

10                  That's what the Crime Victims' Rights Act  
11 required. That's what they did not do, and they violated  
12 the act.

13                  And then the only remaining question is, all  
14 right, they violated that, what's the remedy? Again, we  
15 think that falls like the next domino in the chain.

16                  THE COURT: We will take that up separately. I'm  
17 sorry to do it piecemeal, but I need to make that analysis,  
18 have this hearing, make this decision, and then we will get  
19 there if and when we need to.

20                  MR. CASSELL: All right. We certainly hope that  
21 we get there.

22                  THE COURT: Thank you.

23                  MR. DUFFY: Your Honor, if I may, I would like to  
24 take a little bit, over half the government's time and  
25 reserve a little bit for my colleague to address the but-for

1 issues.

2 Your Honor, we think that we understand the  
3 Court's opinion, and we think that the record does not  
4 establish that the movants are crime victims under the  
5 statute.

6 First, we understand the Court's opinion. You  
7 cited to, your Honor, to the Fisher case. We recommend, we  
8 suggest that you also look at the Supreme Court's case in  
9 Paroline v. United States at 572 U.S. 434, specifically 444  
10 to 445. And that, in 2014, was the Supreme Court's most  
11 detailed description of proximate cause.

12 And we think, your Honor, that incorporates two  
13 very important concepts that Fisher doesn't entirely get at.  
14 It's not just foreseeability. It certainly is  
15 foreseeability. But it's also the directness of the causal  
16 connection between the initial cause or the cause at issue,  
17 and then the ultimate consequence.

18 And to the extent that they're intervening causes,  
19 your Honor, we respectfully submit that each of the  
20 intervening causes has to be determined, both in terms of  
21 its directness to the final outcome, but also its magnitude.

22 There could be a cause that's more remote, more  
23 proximate, but there also could be a cause that's more  
24 significant and others less significant. We think it  
25 incorporates both and we respectfully request that the Court

1 look at it in that lens.

2 We also think supporting that position is the  
3 Fifth Circuit's case we referenced for you at the prior  
4 argument of Fisher. Specifically, excuse me, United States  
5 vs. Salinas, 918 F.3d 466, Fifth Circuit's 2019 case which  
6 actually did not incorporate proximate causation in a  
7 sentencing enhancement.

8 What the Fifth Circuit said is there was a  
9 proximate cause inquiry when asked how directly each cause  
10 affected the final outcome, and we submit that that's the  
11 second prong of foreseeability that Fisher doesn't quite get  
12 at.

13 And then finally, your Honor, we respectfully  
14 submit that you should look at the United States against  
15 BP Products case, the F.610 F.Supp.2d at 688 from the  
16 Southern District of Texas, where the Court described that  
17 proximate cause in a criminal matter is different than  
18 proximate cause in a civil matter, recognizing that we're  
19 using preponderance of the evidence as an overlay on a  
20 criminal case.

21 And that comes back to the foundation of the facts  
22 here, which is the factual basis for the plea. We think the  
23 Court was absolutely right to focus on the McNulty case from  
24 the Sixth Circuit. In terms of the foundation of your  
25 analysis, the foundation is the agreed-upon facts or the

1 facts established at trial.

2 Here is the factual basis. You asked, and then  
3 you cited at that hearing, and then you cited in your order  
4 that there was a concession made by the government, where we  
5 indicated that not -- that it's not the entire universe,  
6 that you could look at more than just the four corners of  
7 the factual basis. But we submit it's more limited than in  
8 this particular case.

9 So, for example, in a securities fraud case, your  
10 Honor, where there might be a stock manipulation and the  
11 parties agree that the stock manipulation has occurred over  
12 a one-day period of time. So, for example, that the stock  
13 was inflated or decreased by a dollar per share, and that's  
14 the factual basis.

15 We agree that a potential victim could come  
16 forward and say, here are my bank records, or I was a  
17 shareholder during the manipulation period. I had 100  
18 shares and my losses are \$100.

19 For example, a factual basis would not be expected  
20 to list all of the shareholders in those circumstances, in  
21 part because they may not be known at the time, or there may  
22 other records, or they may be difficult to get at, and so on  
23 and so forth. And that's the kind of example we think the  
24 Court, you know, I think saw when it read McNulty and then  
25 set up this hearing.

1 Today I want to come back to the factual basis  
2 itself. Because there, it is true, we cite the shocker  
3 alert email from November 15th, 2016. We submitted that in  
4 total to the Court, because it is the foundation, it's the  
5 beginning of the criminal conduct to which we charged and  
6 then we stipulated with Boeing.

7 But it's limited. It has -- it's difficult  
8 because of the context. One, it pertained to a flight  
9 simulator by technical pilots, not test pilots. A flight  
10 simulator that was under development. A flight simulator  
11 that had a thousand errors ultimately that had to be  
12 corrected.

13 MR. CASSELL: Objection, your Honor.

14 MR. DUFFY: Excuse me, I would like to finish and  
15 then counsel can respond.

16 THE COURT: What is the objection?

17 MR. CASSELL: I don't think there's anything in  
18 the record about a thousand errors in the flight simulator.

19 THE COURT: Okay. Well, I remember it from the  
20 trial. It's not from the stipulated facts, but go ahead.

21 MR. DUFFY: Your Honor, so it's a flight simulator  
22 that is in development stages. It's clear from that  
23 exchange, the information has been withheld from the two  
24 conspirators.

25 We represented to the Court, the Court referenced

1 this in its order, that we did not uncover evidence of  
2 criminal participation by other employees at Boeing, only  
3 Forkner and Boeing employee two as referenced in the factual  
4 basis.

5 So, the other fact, the only other fact in the  
6 factual basis where, frankly, we were able to confirm some  
7 piece of information that Mr. Forkner was apprised of the  
8 existence of the expansion of MCAS, the only other piece is  
9 referenced, your Honor, in the factual basis at paragraph  
10 37. And that is a senior engineer, your Honor, who  
11 testified at the Forkner trial. You will recall  
12 Mr. Loffing.

13 And the conversation is vague, your Honor. The  
14 description of that conversation, you heard the description.  
15 And it was, I had a conversation, I mentioned the expansion  
16 of MCAS, but I said he should go talk to other people. I  
17 didn't know the details, essentially. That's also how the  
18 factual basis describes it.

19 There is a reason, your Honor, that the wording  
20 used in the factual basis for the knowledge that these two  
21 conspirators were aware of was expanded operational scope.

22 The reason we use that language is because that's  
23 what we believed the evidence could prove beyond a  
24 reasonable doubt, setting aside the Forkner case. Not  
25 because we are looking to limit or cabin the liability of



1 Boeing or anybody else.

2 It was a limited criminal case, as we submitted to  
3 the Court during our argument previously in the first  
4 hearing your Honor held. And that is -- that's the evidence  
5 of the criminal conduct of these two individuals.

6 So you heard over the course of the previous  
7 proceeding and, of course, I wasn't here, I'm sorry, but I  
8 read the transcript. And, of course, today, you heard quite  
9 a bit about all the other facts that pertain to Boeing,  
10 individuals at Boeing, and that they were aware of all kinds  
11 of problems with MCAS. And there's a lot of evidence out  
12 there.

13 But what we know and what you can impart from the  
14 factual basis is that MCAS was expanded in March of 2016,  
15 that there was a testing of MCAS that occurred over the  
16 course of 2016, that there was some issue that was to be  
17 addressed by that expansion.

18 And there was some decision by somebody to -- and  
19 the expansion addressed that issue. And then there were  
20 meetings with the FAA to describe that expansion in which  
21 the FAA flightworthiness side approved that. All of that  
22 was outside the knowledge base of the two conspirators, all  
23 of it.

24 And as a result, you can look at that factual  
25 basis, and you can say, this really is a limited conspiracy,

1 and it is. And so, that forms the foundation, we think, for  
2 your foreseeability, your proximate cause, foreseeability,  
3 and causal connection analysis.

4 With that said, your Honor, I would like to  
5 reserve the remainder of the time with my colleague. I just  
6 would like to point out that your Honor referenced it's hard  
7 to square the government's position, to a degree, with the  
8 reference to the crashes in the factual basis.

9 I want to emphasize, I think I explained it last  
10 time, but I want to emphasize to the Court directly, the  
11 reason the crashes are referenced is because they put into  
12 context the false statement that is set forth by Boeing  
13 employee two after the first crash.

14 And the first crash there is a meeting as  
15 referenced in the factual basis in which Boeing employee two  
16 disclaims knowledge of any prior expansion.

17 And to our eye, that was the only significant  
18 piece of evidence of criminal intent on the part of Boeing  
19 employee two. It is limited, your Honor. It is a limited  
20 case, but that is the reason the factual basis -- the  
21 crashes were referenced is because they put context into  
22 that false statement.

23 Because it is essentially a consciousness of guilt  
24 statement at that point in time, and that's why we have it  
25 there. Is it inartful? Perhaps.

1 Did it ultimately raise a lot of questions? It  
2 surely did, but that is the reason that it was put there,  
3 not because there was some backdoor effort to claim that  
4 this criminal conduct resulted in those crashes.

5 And we take no position, as we said, in our first  
6 argument as to whether or not Boeing is liable for those  
7 criminal crashes under some other type of law or whether or  
8 not the crash victims should be able to recover elsewhere.  
9 Surely, they should.

10 But that is the position of the United States with  
11 respect to why we put the crashes in and we referenced those  
12 crashes, it was for a limited basis. And with that, I would  
13 like to reserve the remaining time.

14 THE COURT: Before you go, though, so do I  
15 understand what your argument -- do I understand your  
16 argument to be, as it relates to these cases that you've  
17 talked about, that hold for the proposition that intervening  
18 events can cause something to be more significant or less  
19 significant in the proximate cause exchange?

20 Do I understand you to be saying that, if I'm  
21 limited only to the email and the Loftus direction, that  
22 that means on the directness scale of the probable cause  
23 scale, it's less significant? Is that what I'm taking?

24 MR. DUFFY: Yes, your Honor.

25 THE COURT: Go ahead.

1 MR. DUFFY: I think it impacts both. It's both  
2 the foreseeability of the conspirators at the time of the  
3 conspiracy because of what they know.

4 We don't have evidence, and the Court doesn't have  
5 evidence as defined by the Statement of Facts and really  
6 anything else, that Mr. Forkner or Mr. Gustavsson -- or,  
7 excuse me, Boeing employee two were aware of the, for  
8 example, the AOA sensor, or the problems with only one  
9 sensor firing, or the fact that this was a 21-degree angle  
10 of attack problem, or the fact that the prior flight with  
11 Lion Air didn't -- wasn't reported adequately by that crew,  
12 let alone repaired or fixed before the crash flight.

13 For example, because by coming back to that  
14 limited basis of knowledge, that changes foreseeability.  
15 And it also, I think, your Honor, there's no doubt, and we  
16 have argued, that they knew that there had been a low-speed  
17 expansion, but it was limited in knowledge.

18 We did not come across additional evidence that  
19 showed that they were ever explained why or why the  
20 expansion was caused -- was proposed to address or how it  
21 addressed it or things of that nature.

22 And so, I think that that goes both to the  
23 foreseeability, but also to the links in the chain that  
24 ultimately lead to the crash.

25 If I may, I know I've probably taken more than you

1 proposed, but I would respectfully request my colleague be  
2 allowed to address that.

3 THE COURT: Yeah, I will give you some time. I  
4 want to finish this so that, when we leave here today, I  
5 fully understand what your argument is.

6 MR. DUFFY: Yes, your Honor.

7 THE COURT: And so, these are -- you're saying  
8 these are both foreseeable. These go to foreseeability and  
9 subsumed within that is the directness showing the  
10 significance or not significance?

11 MR. DUFFY: The directness. Yes, your Honor. The  
12 magnitude of each one. So, for example, the links in the  
13 chain, it is dramatic that the prior flight had a 21-degree  
14 angle of attack sensor that was erroneous, and they had  
15 stick shaker in that landing.

16 And they had all the other problems that were  
17 referenced in the summary of the report -- I will get to  
18 that in a second -- but that that wasn't adequately reported  
19 or repaired before the flight, before the crash flight. The  
20 very same plane. The very next flight.

21 Now, don't get me wrong. We acknowledge that  
22 there are other -- there would be other links in the chain,  
23 at least you have to assess, but that is a dramatic one.

24 We think that that would, for example, that would  
25 not be foreseeable. I guess I would like to say as well we

1 also object to the manner in which the evidence has come in  
2 through this hearing.

3 We understand the Court's position. I think I  
4 understand your Honor's position is that you will give it  
5 the weight you think it deserves, and I totally respect  
6 that, but I would note that these crash reports and the  
7 congressional report have hearsay within hearsay within  
8 hearsay.

9 To the extent your Honor looked at the expert  
10 reports and the citations, for example, to the congressional  
11 reports, they contained congressional report summaries and  
12 characterizations of evidence and lots of footnotes. The  
13 footnotes included things like news articles. They included  
14 things, sometimes investigative testimony by the committee,  
15 but other times third-party sources. And that's not the  
16 level of hearsay -- that's not the level of evidence, we  
17 submit, would be appropriate to make such a finding.

18 For example, if I came back to that stock  
19 manipulation example that, you know, could be, for example,  
20 bank records or whatever it is to show that the aggrieved  
21 shareholder actually held the shares or you could -- or the  
22 government could somehow provide that as directed, or  
23 whatever it may be, but that's because of the proximate  
24 causation problem here, and the but-for causation problems  
25 that really are really the basis of why we internally took

1 the decision that the conduct we were able to prove -- we  
2 believed we were able to prove -- did not have an adequate  
3 causal connection to the crashes. That's why.

4 THE COURT: Given the stipulations, do you contend  
5 that it would be improper for me to consider the Boeing  
6 emails, for instance, 4 and 5 or 5 and 6, whatever they  
7 were?

8 MR. DUFFY: I don't contend that it would be  
9 improper to consider the specific emails, you know, reliable  
10 hearsay. There's a concept obviously in the law of reliable  
11 hearsay. Your Honor has suppression motions all the time,  
12 I'm sure. And that's one thing. And this is a  
13 preponderance of the evidence standard.

14 But using a foreign authority's crash report -- in  
15 one instance, an interim crash report, that have all kinds  
16 of things cited in which the Justice Department was not a  
17 party, which we're not able to sponsor or otherwise -- you  
18 know, otherwise account for that evidence or challenge it in  
19 a meaningful way because it was collected over a couple of  
20 years by foreign individuals who we don't know.

21 And, you know, it's got all of these different  
22 issues embedded in it. In one case, as you saw, it's even  
23 written with all kinds of grammar problems, which doesn't  
24 indicate necessarily that the evidence described as  
25 problematic.

1                   What it does say is that the overall concept of  
2                   doing a large investigation in Ethiopia or off the coast of  
3                   Indonesia, that that's the kind of thing that would be  
4                   incredibly complicated for this Court to sort of ultimately  
5                   say, no, no, I'm going to rely on that, because we object to  
6                   that.

7                   We do not consider that to be adequate evidence  
8                   for this Court to make a determination. Particularly one  
9                   that's as complicated as this one which has all these  
10                  different factors that go from the limited basis of  
11                  Mr. Forkner and individual number two's knowledge during the  
12                  course of the conspiracy and ultimately those crashes, those  
13                  tragic crashes.

14                  THE COURT: Let me ask you then, as it relates to  
15                  those reports, would it be proper for an expert who says  
16                  that they review and rely on those reports to include those  
17                  in the individual expert's opinion, and, therefore, that  
18                  information is a valid consideration by the expert and so it  
19                  formed their opinion and so I need to know what it is?

20                  MR. DUFFY: Right. We don't think so. We don't  
21                  think so, because under Daubert -- I think the place to go  
22                  here is Daubert. As we know, those are not formula experts  
23                  that are using some sort of formula or scientific basis and  
24                  so on and so forth. These are, if you will, experiential  
25                  experts.



1 One of the things we heard, the Court heard, I  
2 read at the prior hearing, is that the prior expert hadn't  
3 read, for example, the entire congressional report as an  
4 example.

5 But separately, your Honor, the reason we don't  
6 think it would be proper is because it is multiple levels of  
7 hearsay, collected in a manner that doesn't give it, in and  
8 of itself, indicia of reliability.

9 We object to the Court relying upon those, for  
10 example, foreign crash reports, because we are not prepared  
11 to say that they're true and accurate. It doesn't mean that  
12 they don't raise significant issues.

13 We referenced them in our brief -- in one of our  
14 briefs, your Honor, in response to the motions because they  
15 raise issues. There's no doubt they raise issues.

16 But what you're really having is, if an expert is  
17 relying on multiple levels of hearsay, that they're in turn  
18 summarizing in part, and then giving you opinions based on  
19 that, it's almost like dressing up something that otherwise  
20 is, you know, still an ugly duckling.

21 And the reality is this is not a sufficient level  
22 of evidence to make this kind of finding, which comes back  
23 to the issue of why it's so hard and why we, in part, were  
24 not able to -- you know, not able to -- to -- and we took  
25 the position that the crash -- the crashes were not directly

1 and proximately caused by the harm.

2 I want to come back to the issue of the BP  
3 Products case, for example, and the cases I cited. And  
4 that's because we are importing a civil preponderance of the  
5 evidence and hearsay standard into a criminal case. It  
6 raises all kinds of constitutional issues, as the Court  
7 pointed out in response to some of the arguments that have  
8 been made by movants.

9 Your Honor, when you import into this case hearsay  
10 upon hearsay and an expert essentially saying, "I read part  
11 of a congressional report that has news articles and  
12 summaries and characterizes evidence, and that I'm going to  
13 use that and rely upon it to make a finding," which is what  
14 you have before you with all the expert reports that have  
15 been submitted. When you have that, that really puts the  
16 criminal process sort of upside down because we have to  
17 think in terms of not just beyond a reasonable doubt, but it  
18 really impacts the rights, we think, of both parties.

19 If you are going to use evidence that is not  
20 adequately reliable and can't be tested, the evidence  
21 itself, then there's almost no rules. And so, we think that  
22 is not acceptable.

23 We understand the concept of hearsay, but it has  
24 to be reliable.

25 THE COURT: And Rule 702, right? That's

1 essentially what I was asking you, which is Rule 702 permits  
2 an expert to rely on hearsay.

3 And you're saying, yes, I understand that  
4 construct. But in this case, the hearsay is so unreliable,  
5 no reasonable expert would rely on it, is that what you're  
6 saying?

7 MR. DUFFY: Well, that's in part what I'm saying.  
8 I'm also saying it's not adequate. There's so much hearsay  
9 embedded with it.

10 In other words, it's -- you know, for example, you  
11 heard in cross-examination about the AOA sensor in the prior  
12 flight. In cross-examination, our witness today was very  
13 reticent to answer questions about it, because she said  
14 that's what the summary says, that's what the summary says.

15 She's essentially just reading what's in a  
16 document or regurgitating in some way. And there's no  
17 otherwise analysis of the underlying events because they're  
18 so complicated.

19 I think that here it's one thing to summarize a  
20 large body of evidence, if it in fact has indicia of  
21 reliability, but -- and then come in and testify about it in  
22 sort of a hearsay fashion. But we have multiple layers of  
23 hearsay here.

24 For example, in preparing for the expert who did  
25 not testify, I saw in one instance at least four layers of

1 hearsay once you go to the news articles that are cited,  
2 then their sources cited within the news articles.

3 My point is that those opinions are not based on  
4 something that's adequate for this Court to make findings  
5 on. I don't know how you would make findings on that  
6 underlying evidence and feel comfortable that justice has  
7 been done in this courtroom in Fort Worth, Texas.

8 THE COURT: Thank you.

9 MR. DUFFY: If I may, my colleague would like to  
10 address causation.

11 MR. JACOBS: Your Honor, as this Court has heard  
12 and seen, the crashes of Lion Air, Flight 610, and Ethiopian  
13 Airlines, Flight 302, were, we would submit, the result of a  
14 series of events in a complex chain of events, nothing in  
15 the voluminous record shows at all that there is a direct  
16 line from the conduct of Mr. Forkner or Boeing employee two  
17 to either of the two plane crashes.

18 To the contrary, the record shows the complexity  
19 of this analysis, and it shows that it cannot plausibly be  
20 held, certainly not by a preponderance of the evidence, that  
21 the conduct of Mr. Forkner and Boeing employee two directly  
22 caused either plane crash.

23 We would submit that, despite all the record  
24 evidence here about how MCAS was designed, including that  
25 MCAS relied on information from a single AOA vane and that

1 MCAS could ratchet the nose of the plane down to an  
2 unlimited degree, essentially until the plane was vertical,  
3 heading straight toward the ground, that there was a  
4 complete lack of evidence that Mr. Forkner or Boeing  
5 employee two ever knew all aspects of how MCAS was designed,  
6 including those critical pieces of information.

7           The only piece of information that was alleged to  
8 have been withheld from the AEG was MCAS's low-speed  
9 expansion, as the Court is fully aware, even granting that  
10 that piece of information would have led to Level-D  
11 differences training or the full-flight simulator training,  
12 there's no evidence in the record that foreign regulators in  
13 Indonesia and Ethiopia would absolutely have required their  
14 airlines operating in their country to undergo that type of  
15 simulator training.

16           Just to go through a series of even-ifs. Even if  
17 that were to be the case, even if Indonesia or Ethiopia  
18 required that simulator training in their countries, there's  
19 no evidence that those particular accident scenarios that  
20 actually happened both on Lion Air, Flight 610, and  
21 Ethiopian Airlines, Flight 302, actually would have been  
22 trained on in the simulators.

23           So in other words, even if simulators were  
24 required in Indonesia or Ethiopia, we don't know how  
25 successful those simulators would have been in actually

1 identifying or demonstrating these particular accident  
2 scenarios.

3 Even if they were, we would submit that the causal  
4 link is still broken, your Honor, by what happened on the  
5 flight before the crash flight, the flight before Lion Air,  
6 610.

7 As the court has heard, the flight before 610  
8 experienced an erroneous MCAS activation, but nevertheless,  
9 that flight was able to land.

10 And the Court heard, with respect to that  
11 particular aircraft, which is the same aircraft that was the  
12 crash flight, there were maintenance issues with respect to  
13 that plane.

14 There was an angle of attack sensor that was  
15 installed incorrectly on that plane, giving it essentially a  
16 21-degree bias as reflected in the synopsis. Your Honor  
17 heard that could effectively result in the plane taking off  
18 with its computer systems thinking that the plane was  
19 heading up with a trajectory of something like 40 degrees,  
20 which a plane, an ordinary, normal commercial flight, would  
21 never do upon takeoff which would certainly trigger MCAS.  
22 That's a significant issue.

23 As well as the fact that after the plane landed,  
24 the pilots of that plane, as reflected in the synopsis, did  
25 not report that they experienced stick shaker going on in

1 the cockpit.

2 Your Honor heard through the testimony today that  
3 the stick shaker can be incredibly distracting, incredibly  
4 loud, incredibly disorienting, yet the pilots on that flight  
5 did not report stick shaker upon landing.

6 And so, by the time you get to the very next  
7 flight, Lion Air 610, those pilots are at a significant  
8 disadvantage because the AOA vane had been installed  
9 incorrectly.

10 The pilots on the flight right before theirs who  
11 experienced this erroneous MCAS activation, who were still  
12 able to land the plane, didn't put anywhere that they  
13 experienced stick shaker. They didn't give the pilots  
14 information that would have been essentially involved into  
15 their deciding what to do if they experienced something like  
16 the pilots in the flight just before them experienced.

17 So we would submit that the lack of information  
18 about MCAS is not a but-for cause of the crash. In other  
19 words, to hold that, I think the Court would have to say,  
20 but for withholding information about MCAS, these flights  
21 would not have crashed.

22 But we know that a plane could be safely landed  
23 without information about MCAS, because exactly as what  
24 happened in the flight before Lion Air 610, all those pilots  
25 would have to do is flip the stabilizer trim cutout switch,

1 the stab trim cutout switch, which is exactly what the  
2 pilots in Lion Air -- the flight right before Lion Air, 610,  
3 did. And it's exactly what pilots are trained to do when  
4 they experience runaway stabilizer.

5 So we have Lion Air, 610, and we would submit that  
6 that is also a critical inflection point in the direct  
7 causal chain, because after this particular tragedy, the  
8 entire aviation community now knew about MCAS.

9 To the extent that the aviation community didn't  
10 know about MCAS before Lion Air, Flight 610, MCAS was widely  
11 known throughout the world after Lion Air, Flight 610. It  
12 was no longer a system that pilots didn't know about.

13 What we know is that after the first crash, the  
14 AEG, at that point, then knew that MCAS would operate at low  
15 speed. And that's the point that I've been trying to  
16 emphasize to the Court and bring out with the witnesses, is  
17 that the one piece of information that Mr. Forkner and  
18 Boeing employee two withheld was that MCAS would operate at  
19 low speed. After the Lion Air crash, the AEG had that piece  
20 of information.

21 So the gap, if there was one, that gap was filled.  
22 And despite having that gap filled, the AEG still published  
23 the Emergency Airworthiness Directive telling pilots simply  
24 to follow the runaway stabilizer procedure, which is just to  
25 flip the stab trim cutout switches. So that was



1 October 29th, 2018, when the Lion Air, Flight 610, crashed.

2 After October 29th of 2018, there were flights  
3 worldwide from that point in time until March 10th of 2019,  
4 when Ethiopian Airlines crashed.

5 Those flights happened around the world, as far as  
6 we know, without incident. There was no evidence that this  
7 Court heard, between the Lion Air crash and the Ethiopian  
8 Airlines crash, about what Ethiopian Airlines did after the  
9 Lion Air crash to train their pilots about how to respond to  
10 an erroneous MCAS activation.

11 There was no evidence presented to this Court that  
12 Ethiopian Airlines reiterated in any way, shape, or form the  
13 FAA's guidance in the Emergency Airworthiness Directive to  
14 simply use the stab trim cutout switch procedure.

15 There was no evidence that the pilots on the  
16 Ethiopian Airlines flight actually knew or understood that  
17 particular guidance; we just don't know.

18 Ultimately, as we do know, Ethiopian Airlines,  
19 Flight 302, tragically crashed on March 10th of 2019. And  
20 that was despite existence of MCAS being known at that point  
21 to the aviation world at large.

22 With all of the links in the causal chain leading  
23 up to the Lion Air crash, we would respectfully submit that  
24 the movants can't establish a direct line from Mr. Forkner's  
25 and Boeing employee two's misconduct to the Lion Air crash.

1 And then after the Lion Air crash, again, we would  
2 respectfully submit that the movants can't establish a  
3 direct line from Mr. Forkner's and Boeing employee two's  
4 misconduct back in 2016 to the Ethiopian Airlines crash  
5 in 2019.

6 Just to conclude, your Honor. As the Court knows,  
7 what someone should have done is not enough to support a  
8 criminal case, and given the evidence before the Court and  
9 evidence about what Mr. Forkner and Boeing employee two knew  
10 and intended, not what they should have known and not what  
11 they should have done, but what they knew and what they  
12 intended, and what's reflected in the Statement of Facts, we  
13 would submit that the movants simply can't establish that  
14 the conduct contained in the DPA and the Statement of Facts  
15 was the direct and proximate cause of either of the plane  
16 crashes.

17 So for that reason, your Honor, we would  
18 respectfully submit that the movant's motion should be  
19 denied.

20 THE COURT: Let me just ask you. What about the  
21 evidence from today's witness that immediate notice or  
22 timely notice to the FAA AEG would have triggered, upon  
23 notice, the higher training level and that does -- as the  
24 witness said today, we would be living in today's  
25 environment.

1                   Is that not enough to show that there's a direct  
2                   cause between the failure to give that notice and the higher  
3                   level of training which would have resulted in no crash, on  
4                   her opinion?

5                   MR. JACOBS: Sure. If I wasn't clear, I would  
6                   say, even granting that fact even assuming that the AEG  
7                   would have required full-flight simulator training, there's  
8                   still a number of steps to get from the AEG here in the  
9                   United States requiring full-flight simulator training, to  
10                  getting to that decision here in the United States  
11                  preventing, years later, two separate crashes outside of the  
12                  United States. I tried to walk through --

13                  THE COURT: Right.

14                  MR. JACOBS: -- that analysis. I hope that  
15                  addresses the Court's question.

16                  THE COURT: Right. Correct.

17                  So if we take as true that, in the environment we  
18                  are in today, with the training level we have today, that  
19                  that would be the end result, are you suggesting that there  
20                  still might have been a crash, Lion Air and Ethiopian Air,  
21                  because they might not have adopted the FAA training  
22                  requirement? Is that what I understand you to be saying?

23                  MR. JACOBS: Well, they may not have adopted the  
24                  FAA training requirement. Even if they did --

25                  THE COURT: Right.

1 MR. JACOBS: -- there's nothing in the evidence  
2 that would show that had they actually gone into a simulator  
3 to experience MCAS, they would have experienced what these  
4 pilots experienced during this exact accident scenario.

5 This was something that I think even the witnesses  
6 have said was the product of design failures, design flaws,  
7 other things that people necessarily didn't anticipate. So  
8 if you can't anticipate something, if you can't anticipate a  
9 single AOA vane breaking or what would happen if the nose of  
10 the plane ratcheted all the way down, even if you go into  
11 simulator, you can't program a simulator to have pilots be  
12 trained to experience those types of things. So we just  
13 don't know. I think that's the point, we just don't know.

14 Even if the FAA said full-flight simulator  
15 training was going to be required here in the U.S., what  
16 would have happened after that around the world, whether  
17 other countries, including Ethiopia and Indonesia, would  
18 have adopted the simulator training, even if they did, we  
19 don't know how that simulator training would have been  
20 conducted and whether that simulator training would have  
21 addressed this particular issue in a way that then would  
22 have somehow been relied upon by pilots years later in  
23 preventing these two tragedies.

24 THE COURT: I guess what I'm wondering is, you  
25 just said that they, in essence, need to flip the switch,

1 the stabilizer trim switch.

2 And so, what I'm wondering is, had Boeing informed  
3 the FAA that MCAS expands at low speed, then FAA AEG would  
4 have required more training, whatever it is, and that  
5 training would have included flip the trim switch when  
6 you're at low speed and MCAS has kicked in.

7 So why are we talking about intervening causes?  
8 Why would an intervening cause have prevented a pilot on  
9 Ethiopian Air or on Lion Air from simply learning, when this  
10 happens, I need to flip this switch?

11 MR. JACOBS: I don't know that we know. I don't  
12 think the evidence before this Court actually shows that had  
13 there been simulator training, that the simulator training  
14 would have trained to an erroneous MCAS activation or a  
15 failure of MCAS kicking in when it shouldn't have.

16 THE COURT: Well, but if you would have disclosed  
17 that MCAS will kick in at low speed, wouldn't the training,  
18 whatever it is, the sim training, however you diagram this  
19 training, wouldn't that training have focused on low-speed  
20 firing of MCAS by definition?

21 If that's what is disclosed, why would you train  
22 on something else if that's what you need to prepare the  
23 people for?

24 MR. JACOBS: Sure. But I think, as the Court may  
25 recall, as MCAS was originally designed, even if it operated

1 at low speed, it was designed to still be transparent to the  
2 pilots. You know, that was some of the testimony that your  
3 Honor heard.

4 So what you'd essentially have to do is have the  
5 AEG be aware of all this other information that could cause  
6 an erroneous MCAS activation, including these design  
7 elements that wasn't within the AEG, wasn't within their  
8 purview, I think as the testimony before your Honor  
9 explained, so the aircraft certification office.

10 I don't think there was any evidence that  
11 Mr. Forkner or Boeing employee two also were aware of these  
12 design elements.

13 THE COURT: Right.

14 MR. JACOBS: So you could have the simulator and  
15 you could have had the pilots go into the simulator and test  
16 MCAS, and they would have said that's MCAS kicking in, but  
17 you're not actually feeling it, which I think your Honor may  
18 recall, which is exactly what happened in a test flight  
19 which happened earlier during the development.

20 There was actually a test flight where I believe  
21 Ms. Klein was in the plane and there was an MCAS activation.  
22 Because MCAS was designed to be transparent to the pilot,  
23 nobody knew anything was going on.

24 So you had to conjure up or think of these  
25 scenarios, if you're in the AEG, about what happens if MCAS

1 kicks in erroneously?

2 And what are the design elements that feed into  
3 MCAS that could cause MCAS to kick in erroneously?

4 With the AEG not having that information, with  
5 Mr. Forkner and Boeing employee two not having that  
6 information, therefore, not being able to share it with the  
7 AEG, we just don't know what the AEG would have done, how  
8 they would have trained on MCAS, what that would have looked  
9 like, perhaps other than to say, oh, by the way, there's a  
10 system on the plane called MCAS.

11 Deal with it exactly like you deal with a runaway  
12 stabilizer which, when the runaway stabilizer kicks in, the  
13 nose of the plane is also moving up and down. Essentially,  
14 perhaps, depending on what's happening, the same way as an  
15 erroneous MCAS activation.

16 THE COURT: Will you walk me through your argument  
17 on the significance of the time period between the two  
18 crashes? Between the two crashes, explain that more fully.

19 MR. JACOBS: Sure. So October 29, 2018, was the  
20 Lion Air crash. After the Lion Air crash, at the very  
21 least, we would submit that the AEG now knows that MCAS  
22 could operate down to low speed. That's the only piece of  
23 information that Mr. Forkner and Boeing employee two  
24 withheld from the AEG.

25 The AEG publishes, just a few weeks later, at some

1 point in November of 2018, they publish the Emergency  
2 Airworthiness Directive.

3 With that gap filled with that one piece of  
4 information now in their knowledge base, they told the pilot  
5 community to just go back to pressure procedures for runaway  
6 stabilizer.

7 This would present essentially in the same way.  
8 The nose of the plane is moving up and down. This is  
9 uncommanded horizontal stabilizer, flip the trim switch, the  
10 stab trim cutout switch. This will deactivate the  
11 horizontal stabilizer, you can safely fly and land the  
12 plane.

13 THE COURT: And so, does that mean your position  
14 is, at best for the movants -- at best for the movants, only  
15 the first crash population are crime victims?

16 MR. JACOBS: At best.

17 THE COURT: At best for the movants.

18 Right. You don't believe anybody is, I understand  
19 that.

20 But is this argument telling me that, if I'm  
21 inclined to find the proximate cause and but-for proximate  
22 cause exists here, that I cannot do it to the second crash,  
23 because it was so well-known and these directives came out,  
24 there's no way on a proximate cause standard those people  
25 meet the definition, even if I were to assume the first



1 crash people do?

2 MR. JACOBS: With that series of assumptions, your  
3 Honor --

4 THE COURT: Right.

5 MR. JACOBS: -- very much respectfully, that would  
6 be our argument.

7 THE COURT: I mean, is that the argument you were  
8 making, I guess? I'm not trying to put those words in your  
9 mouth.

10 MR. JACOBS: No, it is, your Honor.

11 THE COURT: Anything else?

12 MR. JACOBS: No, your Honor. Thank you very much.

13 THE COURT: Okay. Thank you.

14 MR. HATCH: Thank you, your Honor. I will  
15 endeavor not to be repetitious of any other counsel. And  
16 certainly, your Honor, The Boeing Company appreciates the  
17 Court's time and attention at this hearing. And if at any  
18 point the Court has a question, I hope the Court would  
19 interrupt me. I would like to try to frame my comments  
20 around the questions the Court has already asked.

21 The Court asked Mr. Duffy some questions about the  
22 evidence and what is in and what's out, and I will start  
23 there, because I think it frames the analysis that follows.

24 As I read the Court's opinion that set these  
25 evidentiary hearings, what the crime is is the DPA. The

1 crime is the DPA, the criminal information, Statement of  
2 Facts. Through these hearings, the movants can attempt to  
3 connect that crime to their harm, direct and proximate is  
4 the standard.

5 What they cannot do is add or subtract to that  
6 crime, because that crime was determined by the Department.  
7 They are the prosecutors, and that is the crime before the  
8 Court.

9 So I start with that because that is why we object  
10 to this other evidence. For example, the Court asked about,  
11 you know, emails 5 and 6, I think there's another one that  
12 came in, those emails were not part of that Statement of  
13 Facts crime.

14 Even if it's other conduct by the same people or  
15 if it's conduct by other people, it was not determined to be  
16 part of the crime. And therefore, it's not a relevant  
17 consideration for what the crime was.

18 They essentially, I would submit, can try to show  
19 causation downstream, right? In a hypothetical, a defendant  
20 robs a bank, the government doesn't identify necessarily  
21 every victim who was in the bank when it was robbed. So a  
22 victim could come and say, "I was the teller behind the  
23 counter who the defendant pointed the gun at." Okay?

24 That doesn't change the bank robbery that  
25 occurred. It just says, I was there. I connected myself to

1 that.

2 But what you can do is say, "I was at a different  
3 bank that that same defendant robbed earlier in the day.  
4 The government hasn't prosecuted him for it, but that also  
5 harmed me." That would be adding, changing the crime the  
6 Department found. That's what you can't do.

7 So that's why we object, point one, just to the  
8 scope of the evidence of other matters coming in. The  
9 Statement of Facts is the evidence of the crime.

10 Now, there's also evidentiary objections, as  
11 Mr. Duffy laid out, hearsay, multiple rounds of hearsay, and  
12 that sort of thing.

13 And to the Court's question about the expert  
14 opinions being based on hearsay, 702 certainly allows an  
15 expert and 703, I think. 703 wasn't referenced but, I  
16 direct the Court to 703. An expert can base their opinion  
17 on inadmissible materials that are relied on by experts in  
18 that field. But the rules are very clear, that does not  
19 make those materials admissible to the trier of fact.

20 So it's fine that you relied upon them. It's fine  
21 that you can form your opinion. The other side can  
22 cross-examine on them, but you can't just restate hearsay as  
23 an expert, and 703 says that.

24 The fact that you relied on it may be appropriate,  
25 but you can't represent it as facts to the finder of fact

1 just because you relied on it. And that's a lot of what we  
2 heard from these experts is things they read elsewhere and  
3 are restating to the Court I think they're not consistent  
4 with 702 and 703.

5 I will just say quickly, as your Honor knows, we  
6 object on Daubert grounds, 702, to both of the experts.  
7 We're happy to file a motion, if the Court would like, we  
8 are awaiting the transcript from today as well. We've  
9 worked on Mr. Keyes' previously. And so, we're happy to  
10 follow up, if that would be helpful to the Court and put  
11 those materials as well in a Daubert motion. So that's the  
12 crime. That's what they've got to show.

13 So let's turn to the evidence that they've adduced  
14 through these two proffered experts to try to show that.  
15 Both of the experts their causation path says, relies on  
16 full-flight simulator, Level-D training having been ordered  
17 originally when the MAX was certified back in 2017. So  
18 that's -- both of them rely on that.

19 If there was -- and there's all these  
20 permutations, as the Court knows, of training. There could  
21 be Level-B training, which there was. But it could have,  
22 for example, included a reference to MCAS.

23 Let's say employee one had disclosed the low-speed  
24 MCAS, that maybe would have resulted in Level-D training,  
25 that would have included a reference to MCAS. That's a

1 possibility that none of their experts have excluded.

2           If that had happened, their experts made no claim  
3 that would be causal to the crashes, because that's  
4 nonfull-flight simulator training, and that's a totally  
5 additional scenario that's noncausal, that their experts  
6 haven't excluded.

7           So both of them need to say, in 2017, just the  
8 fact low-speed MCAS would have been disclosed, it would have  
9 resulted, by a preponderance of the evidence, in their  
10 opinions, and full-flight simulator training being ordered  
11 on the accident scenarios.

12           There's a couple things that I think just prove  
13 that not to be the case on the record. Your Honor, first of  
14 all in the but-for analysis that the Court engages in under  
15 the law, right? But-for conduct, nondisclosure, what would  
16 the but-for role have looked like?

17           There's no reason to think, if low-speed MCAS had  
18 been disclosed in 2016, 2017, when the decisions were being  
19 made by the AEG, that AEG would have foresawn [sic] the two  
20 accident scenarios, both of which involved unintended MCAS  
21 activation due to, among other various causes as the reports  
22 relate, due to erroneous AOA information.

23           So telling the FAA AEG there's such a thing as  
24 low-speed MCAS in no way communicates to them that this  
25 thing could be subject to erroneous AOA information, all

1 this other information.

2 That was other information. But that's, again,  
3 not what employee one and employee two are charged with  
4 withholding from the AEG. And Mr. Jacobs asked Captain  
5 Norton about that. She agreed, that's not in the DPA.  
6 Mr. Keyes agreed to that. Those things are not in the DPA.

7 And so, what effect just the fact of low speed  
8 would have had on them is unknown. No one is saying anybody  
9 envisioned these accident scenarios in 2016 and 2017.

10 And so, we don't know if it would have gone from  
11 Level B to Level D. It could have been Level B with no  
12 change. It could have been Level B with a reference that  
13 MCAS exists. And if it had gone to Level D, there's no  
14 reason to think it would have involved unintended MCAS  
15 activation in the accident scenarios which wouldn't have  
16 occurred for a year or two later. That's point one.

17 And then if you say, well, what is the best  
18 evidence -- the single best evidence that we have that might  
19 have happened in that but-for world?

20 The single best evidence is that AD that was  
21 issued, that is in the materials the Court has, the  
22 exhibits, that was issued in early November 2018 after the  
23 Lion Air accident.

24 Why is that the single best evidence? Because at  
25 that point, the AEG knows about low-speed MCAS, that's in

1 paragraph 49 of the Statement of Facts, which is, after Lion  
2 Air, AEG learned about low-speed MCAS.

3 AEG knows about low-speed MCAS. And it orders,  
4 not full-flight simulator training. It orders -- reminds  
5 crew of their existing training, which is the runaway  
6 stabilizer procedure. And Captain Norton talked about  
7 every 737 pilot on any model is trained on runaway  
8 stabilizer.

9 So we know when the FAA had the information on  
10 low-speed MCAS, we know actually what it did, which was not  
11 to order full-flight simulator training; it was to order  
12 just a reminder of the existing runaway stabilizer  
13 procedure.

14 And as Captain Norton testified, that is the  
15 procedure that you use to counter unintended MCAS  
16 activation.

17 So the Court said, does that -- asked Mr. Jacobs,  
18 does that render causation defeated as to the Ethiopian  
19 aircraft? It certainly does that. But I would say this as  
20 well: It also defeats it as to the Lion Air crash.

21 Why is that? Because if the FAA, which  
22 Mr. Cassell has repeatedly said, and his witnesses have  
23 said, the gold standard in the world of regulation, if the  
24 FAA, in its considered judgment, determined that runaway  
25 stabilizer was the appropriate procedure without simulator

1 training, which they demonstrably did in the materials the  
2 Court has in November, then no one is claiming that the FAA  
3 foresaw the Ethiopian accident to happen. That was  
4 tragically unforeseen.

5 So if the FAA, knowing everything, could say use  
6 runaway stabilizer, and unfortunately, not foresee another  
7 accident, where is the evidence that these two employees,  
8 years before, employee one and two, foresaw something that  
9 the FAA itself did not foresee?

10 In other words, if the FAA couldn't foresee it,  
11 there's no evidence in the Statement of Facts that those two  
12 employees foresaw it.

13 Nor is there any allegation in the Statement of  
14 Facts that they foresaw, caused, desired, or in any way  
15 wanted either of those accidents to occur.

16 So I actually think that event is the best  
17 evidence of what the FAA would have done originally if this  
18 had been disclosed, and it defeats causation more than any  
19 other single fact in this as to both of the accidents.

20 I will comment quickly on their two proffered  
21 experts. Your Honor, neither of them have experience at the  
22 AEG and both of their opinions travel through the route of  
23 saying what the AEG would have done.

24 So respectfully, they are not qualified to testify  
25 to the single keystone of both of their opinions, which is



1 what the FAA AEG would have originally done.

2 Both of their opinions flow through the statement  
3 that they know the AEG would have ordered full simulator  
4 training. If they can't testify as to that, then they  
5 really have no statements that are admissible or helpful to  
6 the issues before the Court.

7 The Court asked about the later simulator training  
8 that occurred on return to service. That occurred after two  
9 accidents and over a year of worldwide grounding of the MAX  
10 fleet, during which there were all kinds of changes in the  
11 MAX.

12 And so, the fact that the MAX received flight  
13 simulator training, which Boeing volunteered on return to  
14 service, does not tell you what would have happened in 2017  
15 before any accidents if only low-speed MCAS had been  
16 disclosed. It was a very different world in 2020, and what  
17 was known from experience at that time, tragic experience,  
18 than what was known in 2017.

19 The Court asked Mr. Jacobs about, well, wouldn't  
20 the simulator training have shown you what to do?

21 I agree very much with Mr. Jacobs. No, we have no  
22 idea, because that presumes that the simulator training  
23 would have anticipated unintended MCAS activation. Which  
24 again, there's no evidence that employee one and employee  
25 two knew about that.

1 And so, no evidence that people would have  
2 designed simulator training around that. That is what  
3 happened later. Captain Norton testified to that after  
4 there were two accidents. Unfortunately, that was one of  
5 the events in the chain of events that led to those two  
6 accidents. But this is not an exercise in hindsight; it's  
7 an exercise in what was a but-for world from the get-go.

8 Just quickly on the IM that Captain Norton  
9 testified about. Respectfully, her interpretation for that  
10 is there is no foundation for that specifically. I could  
11 talk about that more, but there's no -- she has no basis to  
12 say what the individuals were talking about in that IM.

13 And that's also why I asked her if she had  
14 reviewed Barry St. Germain's testimony from the other trial.  
15 That was a witness that spoke to that. She had just  
16 reviewed it. So there's just no foundation for her  
17 knowledge on that.

18 The Court looks at direct and proximate causation.  
19 There has been no expert opinions offered on proximate  
20 causation. I respectfully disagree with Mr. Cassell, that's  
21 not a slam dunk. That's a high standard.

22 None of the CVRA cases that have been reviewed in  
23 this briefing has never found a victim who is so attenuated  
24 from the crime to be a CVRA standing victim.

25 There are so many levels. What would the training

1 have been? Would it have changed? What would have been the  
2 content? Would the foreign regulators have followed that?  
3 Would they have done something different? Would the foreign  
4 airlines have trained on that? Would they have done  
5 something different?

6 Again, the one thing we do know is that, when the  
7 regulators knew everything about low-speed MCAS after the  
8 first accident, they did not order simulator training.

9 Your Honor, does your Honor have any questions  
10 for me?

11 THE COURT: No.

12 MR. HATCH: Thank you, your Honor.

13 THE COURT: Thank you.

14 MR. CASSELL: I hope your Honor will run the  
15 five-minute clock in light of the 10-minute clock that we  
16 just had extensive presentations from both sides.

17 Let me break my rebuttal argument into two pieces.

18 First, what is the record that you have in front of you?

19 And then, second, what inferences do you draw from that?

20 I think both parties here are relying on a number  
21 of things that are outside the record, things that happened  
22 in the Forkner trial, and so forth.

23 Those are not part of the record in this case. We  
24 put in through Captain Norton a couple of pieces of  
25 testimony about Stacey Klein, but many of the things that

1 they are talking about are not only outside the record in  
2 this case they're inconsistent with the Statement of Facts.

3 There are things that defense attorneys for Mark  
4 Forkner were arguing to your Honor and the jury to try to  
5 undercut the very Statement of Facts that has been agreed  
6 upon in this case.

7 In addition to that, we now hear, I think  
8 particularly the government, perhaps Boeing as well,  
9 relitigating the hearsay ruling of your Honor. I must  
10 strongly object to that.

11 I need to remind the Court, because it's very  
12 important to my clients what happened. We had Christopher  
13 Keyes here three weeks ago. Very early into his testimony,  
14 five or ten minutes in, introduced two accident reports and  
15 the House report. Hearsay objection from both sides.  
16 Hearsay objections overruled. Those reports were in.

17 And from the rest of that day forward and all  
18 through today, we relied on the fact that two accident  
19 reports and the House report were in evidence, could be  
20 relied upon by our experts, could be used as substantive  
21 evidence.

22 Now, I think I know why the government may be  
23 trying to relitigate that. They know under the Crime  
24 Victims' Rights Act, if you rule in our favor, there is no  
25 right for them to appeal.

1                   So what they're trying to do is ask you to revisit  
2                   that ruling, but I don't think that's fair to my clients.  
3                   We developed two full days of testimony in reliance on  
4                   overruling of those hearsay objections.

5                   So the record in this case includes Families'  
6                   Exhibits 2, 3, and 4, the two accident reports and the House  
7                   report.

8                   By the way, we wouldn't be fearful of you  
9                   revisiting the issue. Although, we think that's not proper.  
10                  We were prepared, in fact even had briefs, on why those  
11                  accident reports come into evidence.

12                  Your Honor may recall, hearsay exception 8038 for  
13                  records of a government investigation conducted in the  
14                  course of regular activity. The U.S. Supreme Court in the  
15                  Boetsch decision in 1999 looked at what kind of case?  
16                  Aviation accident report. So, yeah, that's the kind of  
17                  hearsay that we don't make litigants bring in every single  
18                  person involved in that accident investigation. We assume  
19                  that the investigators have put together an appropriate  
20                  report.

21                  I laid the appropriate foundation both for the  
22                  Indonesian report, the Ethiopian report, and the House  
23                  report to have all three of those reports qualified under  
24                  8038.

25                  But, of course, none of that was necessary because

1 your Honor quickly and promptly overruled the hearsay  
2 objections. So those reports are in evidence. We relied on  
3 them, and we relied upon them properly.

4 We also heard a concession from the government, I  
5 don't think Boeing contradicted this, that I think the quote  
6 from the government was, "Not improper for the Court to  
7 consider the emails."

8 Those, of course, were included in the House  
9 report, for example, and we introduced them also as separate  
10 pieces of evidence. So those are in the record as well.

11 By the way, these accident investigations that the  
12 government is remarkably attacking today? What are they  
13 saying? The Indonesian authorities, according to two  
14 experts, followed the international protocols for another  
15 investigation. The experts testified that was trustworthy.

16 You know, there are a 130 pages from the  
17 Ethiopians, I think 300 pages from the Indonesians, and we  
18 here from the United States government today, who knows  
19 whether those foreign countries can do an accident report?  
20 Don't buy that.

21 Those were reports that were done in accordance  
22 with international standards that are routinely used in our  
23 context. In fact, the United States Department of Justice  
24 in their first response in this case cited both of those  
25 accident reports.

1 All right. So the reports are in evidence.

2 That's the record.

3 What inferences are proper now, when we start  
4 trying to figure out what that record shows? And we heard,  
5 I think the government stood up and said, nothing shows a  
6 direct chain of causation between the crime committed by  
7 Boeing and the deaths of 346 people.

8 Again, I don't know what to say to that. I was  
9 here, I know your Honor was here on August 5th, we put Chris  
10 Keyes on for an hour or two. And he testified as an expert  
11 that that causation chain existed.

12 All three points: that there would have been  
13 Level-D training, that that would have carried over into  
14 foreign countries, and that the planes would have landed  
15 safely. That's what he testified to.

16 There was cross-examination, fair enough. And  
17 again, we just finished a whole day where we had a very  
18 experienced pilot, Captain Norton, testify to each of those  
19 three links in the chain.

20 So to say there is no evidence in the record, I  
21 can understand they disagree with the evidence in the  
22 record, but to say there is no evidence in the record just  
23 is flatly untrue.

24 So the question that you now face in resolving  
25 this case is, given that two independent experts both

1 reached the same conclusions, that the causation chain had  
2 been proven, what do you do with that?

3 Now, one point to make, by the way, is I listened  
4 very carefully to the government. They did not make a  
5 Daubert challenge to the qualifications of Captain Norton  
6 today, nor did they file anything, nor did they argue  
7 anything, even though you gave them an ample amount of time  
8 to do it.

9 So Captain Norton's testimony should be accepted  
10 from a highly qualified expert, at least against the  
11 government. You remember the three opinions. I asked her  
12 right at the beginning of her testimony, what are your three  
13 opinions? One, two, three links in the chain that we  
14 established.

15 If you find that Captain Norton's testimony is  
16 acceptable, reject, I guess, Boeing's Daubert challenge,  
17 it's game over on the victims issue, because we have the  
18 chain of causation. And same thing with Christopher Keyes,  
19 even more so that we have two witnesses getting to the same  
20 exact place.

21 Let's see. What do we hear? We hear from the  
22 government continuing their no-evidence-in-the-records  
23 theme. Who knows what the Ethiopians would have done? The  
24 Ethiopian accident report, 130 pages long, says we wanted  
25 simulator training. That's the kind of thing they were



1 looking for.

2 We hear from the government but-for causation was  
3 not proven. Who knows what the world would have looked like  
4 without Boeing's crime?

5 And again, we had an expert witness with 34 years  
6 of experience, highly qualified, who flies the 737 MAX. She  
7 provided an expert opinion that we know exactly what the  
8 world would have looked like if Boeing did not commit its  
9 crime, and that's a world in which 346 people live.

10 Let's remember too, again, sometimes I feel  
11 like I'm recounting the obvious here, but you asked the  
12 government, do you have any witnesses?

13 This is the government, by the way, that is in  
14 charge of the FAA AEG that could have come here and put on  
15 experts from that government organization to tell you, no,  
16 it wouldn't. We wouldn't have done anything. They didn't  
17 do that and neither did Boeing. There is no counter  
18 evidence to what Captain Norton testified to and to what  
19 Chris Keyes testified to.

20 So the question then becomes, where are we with  
21 those two experts?

22 What about the Daubert challenge, at least that  
23 Boeing has made?

24 Well, your Honor has written a number of, I think  
25 excellent opinions, that explain the Daubert standard. We

1 can walk through all those. Let me just highlight one or  
2 two opinions that I thought were particularly instructive  
3 for the case that we have today.

4 Nationwide Agra Business vs. Dearing Company works  
5 through the Daubert rules and cites a number of decisions,  
6 saying that Rule 702 embodies a liberal policy towards  
7 qualifications of experts. We don't have overly rigorous  
8 requirements for expertise.

9 And generally makes the point, which I think is  
10 what you find in the Daubert case law that, generally, we  
11 don't throw witnesses out of court. We allow them to come  
12 in and then the finder of fact has the benefit of their  
13 testimony and can weigh that against counter testimony.

14 But here's where the failure of both of the  
15 parties to produce any counter testimony becomes  
16 significant. You have no other experts contrary to  
17 what Captain Norton testified to and what Chris Keyes  
18 testified to.

19 So we think, when you apply the Daubert standard,  
20 you're going to find that both of those witnesses are highly  
21 qualified. You're going to accept their testimony. And  
22 then at that point, we have the links in the chain very  
23 clearly established.

24 Now, let's talk a little bit about what the links  
25 in the chain need to look like, because I think there's been

1 some confusion, I guess I should say, that the other side is  
2 trying to create.

3 What do you need to prove but-for causation in  
4 this case? And we've briefed this, I thought, rather  
5 extensively. This is our reply brief, docket entry 71 at  
6 pages 10 through 15, which I will direct your Honor to, but  
7 there's just a couple of things that I think are important,  
8 I will highlight this evening.

9 The Fifth Circuit has held that but-for causation  
10 is, "Not a difficult burden to meet" as "Many but-for causes  
11 can exist." That's the Salinas case in 2019 out of the  
12 Fifth Circuit. That establishes, I think a pretty basic  
13 tort law principle, look, you're never going to find a  
14 single event in the world that has a sole cause. There's  
15 always going to be a variety of things that come together.

16 So the issue is really, what happens if you remove  
17 one thing from that world? Does the event happen? And  
18 again, we had two expert witnesses on the stand tell you  
19 exactly, I formulated that question very much with that  
20 standard in mind because I knew that was the standard your  
21 Honor would ultimately have to apply and both of them told  
22 you what the world looks like.

23 We've also heard some discussion of  
24 foreseeability. And this is where I think the Fifth Circuit  
25 has been very instructive on this in explaining how loose, I

1 think it's fair to say, the foreseeability standard is in a  
2 CVRA case. This is the Fisher case. Fisher 2. We run  
3 through this at docket entry 71, page 13.

4 Where Professor Robertson, who is a tort law  
5 professor at the University of Texas, wrote, I think it's  
6 fair to say, and the Fifth Circuit has said it's the  
7 definitive article on but-for causation.

8 Here's what Fisher 2 says. This is the Fifth  
9 Circuit now quoting Professor Robertson, "Courts often  
10 emphasize that it is a mistake to insist on too much  
11 certainty when applying the but-for test."

12 It goes on quoting again, Professor Robertson,  
13 "Whenever it can be said with a fair certainty that the rule  
14 of conduct relied upon by the victim was designed to protect  
15 against the very type of risk to which the victim was  
16 exposed, courts have shown very little patience with the  
17 efforts of defendants to question the sufficiency of proof  
18 on cause."

19 Let me just stop for a moment. I mean, we're  
20 debating the foreseeability of a criminal conspiracy to  
21 deceive the safety regulators and whether that foreseeably  
22 creates safety risk? Courts show little patience for that  
23 kind of argument.

24 Second, "Where the conduct of the defendant  
25 greatly multiplies the chances of an accident and is of a

1 character naturally leading to its occurrence, the mere  
2 possibility that it might have happened without the conduct  
3 is not sufficient to break the chain of cause and effect."

4 Here again, what is the character of a conspiracy  
5 deceiving the FAA about training rules? Well, that  
6 foreseeably could lead to pilots not being properly trained  
7 and planes crash.

8 Third, "If it is a matter of ordinary experience,  
9 a particular act or omission might be expected under the  
10 circumstances to produce a particular result. And that  
11 result has, in fact, followed the conclusion may be  
12 permissible that a causal relationship exists."

13 What do we know? We know that Boeing deceived the  
14 FAA about MCAS.

15 At the back end, what do we know? We know two  
16 planes went down because of MCAS, and I think it's a fair  
17 inference, the lack of training associated with that. So we  
18 think but-for causation is very clearly shown.

19 The only remaining question then is this issue of  
20 foreseeability. The Fifth Circuit has instructed that a  
21 person is proximately harmed when the harm is a reasonably  
22 foreseeable consequence of criminal conduct. That's  
23 Fisher 1.

24 As we noted in our brief, again, this is at  
25 page 14 of docket entry 71, our reply brief, "Under standard

1 foreseeability standards, courts" -- this is from the Fifth  
2 Circuit -- "courts have consistently held that  
3 foreseeability turns on the existence of a general danger,  
4 not an awareness of the exact sequence of the events that  
5 produced the harm."

6 When you have a criminal conspiracy deceiving the  
7 FAA's training component, what is the general danger that  
8 exists? Obvious. The general danger that exists is that  
9 the training may end up being inadequate.

10 It doesn't take a genius to decide that, if you  
11 have inadequate training for pilots carrying flights,  
12 commercial flights with more than a hundred people on them,  
13 catastrophic consequences are a potential result.

14 Now, we've heard a lot about, I think it was  
15 Mr. Hatch was saying, well, look, you know, when the  
16 Indonesian flight went down, 14 days later the FAA knew  
17 about low-speed MCAS.

18 That I think is not an accurate depiction of the  
19 evidence, with all respect to Mr. Hatch. Again, I'm not  
20 questioning his argument here, but I'm saying his argument  
21 is inaccurate.

22 I think the simplest way to reach that conclusion  
23 is to look at Families' Exhibit 7. Families' Exhibit 7,  
24 which has been accepted into evidence, obviously, is from  
25 the FAA to civil aviation authorities around the world.

1 And what that says, it's a recitation of  
2 everything that the FAA was doing in the interim period. I  
3 think it was Mr. Jacobs who said the government -- I'm  
4 sorry, the FAA, the very agency you would think they would  
5 be representing, did nothing in the interim period other  
6 than an AD.

7 And there's a long list of things the FAA did.  
8 But it's the very bottom of Exhibit 7, where it says, these  
9 are ongoing oversight activities by the FAA. We are, I  
10 guess, on an ongoing basis, evaluating Boeing's plans to  
11 update training requirements and flight crew manuals to go  
12 with the MCAS design change. The FAA was evaluating that on  
13 March 11, 2019, one day after the Ethiopian flight went  
14 down. So to say that the FAA AEG knew about low-speed MCAS,  
15 that's not consistent with Exhibit 7.

16 And another point, I don't know, we never heard  
17 from the government on this, but remember, I think it was  
18 about five months ago at this very podium, representatives  
19 from the United States Department of Justice told the jury  
20 in this courtroom, and again, I think it's worth quoting  
21 this, "Ladies and gentlemen of the jury," the prosecutors  
22 argued, "it could influence Ms. Klein's decision," that is,  
23 the conspiracy.

24 "But you have more than that, because Ms. Klein  
25 told you when she testified it would influence Level B. It

1 would create simulator training. She told you that, when  
2 she testified."

3 Now, I know there's been some question about  
4 Stacey Klein. We think we have ample evidence in the record  
5 without relying on it, but I think it's noteworthy that when  
6 the United States Department of Justice comes in and makes a  
7 representation to you and a jury, and then a few months  
8 later, from what I'm hearing, tries to back away from that,  
9 you should ask questions about what else is in the  
10 government's files, and why are they taking inconsistent  
11 positions from one case to the other? They were right the  
12 first time.

13 That lie from Boeing could influence the decision  
14 and, in fact, did influence the decision. And you don't  
15 have to take Stacey Klein's word for it. We have two highly  
16 qualified experts, Christopher Keyes and Captain Norton, who  
17 both would tell you exactly that point.

18 Now, remember, our evidence standard today is,  
19 have I proven all of this beyond a reasonable doubt?  
20 Perhaps not, although I think we have a very good case.  
21 Certainly, have proven it by a more-likely-than-not  
22 standard.

23 We heard some discussion from the government about  
24 an intervening cause that potentially lurked out there.  
25 Remember now the way the burdens work. Once the plaintiff



1 or the movants or the victims in this case establish the  
2 chain of events, the burden shifts to the opponent to then  
3 say, well, wait a minute. Yes, you've created the links in  
4 the chain, but here is the intervening cause.

5 Where is the evidence of the intervening cause?  
6 No evidence produced by the government. No evidence  
7 produced by Boeing.

8 And then we hear more about this interim period of  
9 time and your Honor was wondering about the significance of  
10 that.

11 I think there's a lot of smoke being blown there,  
12 but the smoke only covers the second half of the case, not  
13 the first half.

14 Lion Air pilots did not know anything about MCAS.  
15 So whatever may or may not have happened in the interim  
16 period cannot alter the fact that 189 passengers and crew on  
17 that flight were crime victims.

18 But what about whether the Ethiopian flight  
19 applies? I mean, I think they really come down to the same  
20 thing. The FAA AEG didn't know everything in that four- or  
21 five-month period of time. They were investigating,  
22 desperately trying to figure out, trying to figure out what  
23 was going on. And unfortunately, a corporation was  
24 criminally deceiving them about what's going on.

25 You can read the Statement of Facts, paragraph 51,

1 the deception continued even after the Lion Air crash. And  
2 you can also look at the testimony, once the transcript is  
3 available, from Captain Norton who said that the information  
4 that Boeing was putting out was, I think the words she  
5 finally settled on was "highly misleading" and certainly was  
6 confusing to her and others in the pilot community.

7 So to say that the FAA suddenly, oh, we now know  
8 everything, and we're just going to sit on the heels and do  
9 nothing, is a gross distortion of the record.

10 I would encourage you to read, for example,  
11 Chapter 9 in the House report, which goes on at great length  
12 how Boeing tried to blame these crashes on the pilots and  
13 wasn't trying to fix the MCAS problem. That's the  
14 conclusion of the United States House of Representatives in  
15 a 300-page report.

16 So what else do we hear from Boeing? We hear from  
17 Boeing, well, somehow the movants are changing the crime  
18 that's been charged here. We did not change the crime that  
19 was charged here.

20 We read your opinion very carefully and we came in  
21 with two experts. And we asked you -- we asked both of them  
22 I want you to assume that the world was the same, except for  
23 changing one fact: Boeing didn't commit its crime. What  
24 does that world look like?

25 Both of our experts said the world looks like 346

1 people live. I would note, by the way, while Boeing made  
2 the objections to our emails, we continue to believe they  
3 lacked standing in this proceeding. All of their objections  
4 were overruled so that the evidence is all in the record.

5 We then heard from Boeing that, well, these  
6 accident scenarios, who knows what the training would have  
7 looked like. We do know what the training would have looked  
8 like. We had two experts tell us, one of whom was designing  
9 flight simulator training here in Texas a couple years ago,  
10 and another who has been through, I think it was hundreds of  
11 hours of simulator training.

12 They said the simulator training would have helped  
13 the pilots respond to improper MCAS activation. Why else  
14 would they be being trained on that?

15 They would be being trained on low-speed MCAS,  
16 that is activation of low-speed MCAS and how to respond  
17 properly to that.

18 We're also told that -- from Boeing that, well,  
19 the single best evidence in this case is the Airworthiness  
20 Directive that the FAA AEG issued about 14 days after the  
21 Lion Air crash.

22 Lion Air, Flight 610, was at the bottom of the  
23 Java Sea at that point. They were conducting an  
24 investigation. They were trying to recover black boxes in  
25 Indonesia, and the FAA was desperately trying to figure out

1 what was going on.

2 To claim that within 14 days of that crash the  
3 FAA AEG knew everything about low-speed MCAS, they knew that  
4 they had a plane that went down for reasons that they  
5 couldn't figure out, and feared it had something to do with  
6 MCAS. But the idea that the FAA was completely in the light  
7 then, at that point, about what was happening was not true;  
8 they were in the dark because Boeing's conspiracy continued.

9 You will hear also more evidence about the  
10 foreseeability. Here again, in the interest of time, we  
11 didn't spend a lot of time on this, but if you would look at  
12 Chapter 9 of the House Committee Report, there is something  
13 known as the TARAM analysis, which was an analysis that the  
14 FAA undertook.

15 They were trying to figure out that, we just had a  
16 plane go down. How much time do we have to fix this? And  
17 they ended up, it was more than five months. Nine months,  
18 12 months, or something like that. That's what the FAA's  
19 analysis told them.

20 Now, sadly the FAA's analysis was wrong and more  
21 than 100 people died in Ethiopia because their analysis was  
22 wrong. But the FAA was trying to do the right thing. They  
23 were trying to figure out what was going on. They were  
24 trying to keep planes safe. And they were running up  
25 against a criminal conspiracy from The Boeing Company.

1                   So you have no counter evidence at this point.  
2                   You have two highly qualified experts. And they have  
3                   established what the world looks like if Boeing's crime does  
4                   not occur, and that's a world in which 346 people are not  
5                   crime victims.

6                   THE COURT: Thank you.

7                   Okay. I will take this all under advisement.

8                   So I will take it all under advisement and get a  
9                   ruling out just as quickly as I can.

10                  Thank you all for being here.

11                  We are in recess.

12                  CHIEF SECURITY OFFICER: All rise.

13                  (The proceedings concluded at 5:03 p.m.)  
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REPORTER'S CERTIFICATE

I, ZOIE WILLIAMS, RMR, RDR, FCRR, certify that the foregoing is a true and correct transcript from the record of proceedings in the foregoing entitled matter to the best of my ability to hear.

Further, due to the COVID-19 pandemic, some participants are wearing masks, and/or appeared via videoconferencing, so proceedings were transcribed to the best of my ability.

I further certify that the transcript fees format comply with those prescribed by the Court and the Judicial Conference of the United States.

Signed this 15th day of September, 2022.

\_\_\_\_\_/s/ Zoie Williams\_\_\_\_\_  
Zoie Williams, RMR, RDR, FCRR  
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**CHIEF SECURITY****OFFICER: [1]** 261/12**MR. CASSELL: [98]** 5/6

5/8 5/11 5/15 6/18 7/14

8/2 17/19 21/18 31/13 32/6

33/5 35/17 35/21 36/3

37/9 37/13 37/22 38/7

38/14 38/20 38/23 39/6

39/9 39/15 41/1 41/13

45/12 52/21 56/1 57/9

57/13 59/2 63/20 78/12

78/16 78/24 79/4 79/9

79/13 79/18 79/24 80/2

80/7 80/10 80/24 81/4

81/6 81/9 81/12 81/15

81/19 81/21 81/25 82/10

82/15 85/14 92/21 94/7

105/17 109/8 110/14 110/24

111/7 111/14 111/19 111/25

116/25 121/20 123/15

127/22 127/24 131/14

131/20 132/21 153/13

155/19 168/19 177/11

178/25 180/5 183/13

188/13 190/22 191/10

191/14 191/18 191/21

195/25 196/7 196/11

196/22 197/4 197/7

203/20 207/13 207/17

243/14

**MR. DUFFY: [13]** 6/6

6/12 203/23 207/14

207/21 211/24 212/1 213/6

213/11 215/8 216/20 219/7

220/9

**MR. HATCH: [20]** 37/14

38/17 38/22 38/24 41/11

45/8 59/5 144/13 154/22

155/22 162/19 168/22

177/18 177/23 185/18

192/3 196/3 196/16 233/14

243/12

**MR. JACOBS: [24]** 41/9

94/15 110/5 122/6 122/18

142/22 144/4 196/2 196/12

196/14 220/11 227/5

227/14 227/23 228/1

229/11 229/24 230/14

231/19 232/16 233/2

233/5 233/10 233/12

**THE COURT: [153]** 5/4

5/7 5/10 5/14 6/3 6/11

6/17 7/4 7/19 8/5 17/18

32/8 35/9 35/20 36/2

37/1 37/10 37/21 38/13

38/16 39/2 39/7 39/14

39/16 41/7 41/12 41/17

45/18 52/25 59/4 78/11

78/14 78/21 79/2 79/7

79/12 79/15 79/22 79/25

80/6 80/8 80/11 80/16

80/19 80/22 81/2 81/5

81/8 81/10 81/13 81/16

81/20 81/23 82/3 82/14

86/16 91/20 92/23 94/13

94/16 100/4 102/15 102/18

103/7 105/19 107/18

107/22 108/1 108/3 109/25

110/22 111/6 111/8 111/15

111/22 112/3 117/2 122/4

122/14 123/1 123/25

125/12 125/15 126/4 126/7

131/18 133/5 134/17

140/25 141/4 144/7 144/11

153/17 154/17 156/4

162/17 177/15 177/21

179/2 179/5 179/21 179/23

180/8 181/19 183/15 183/19

185/6 187/17 188/5 188/8

188/10 191/5 191/13 191/17

191/20 192/2 192/4 196/4

196/6 196/10 196/13

196/17 197/1 197/5 203/16

203/22 207/16 207/19

211/14 211/25 213/5 213/7

215/4 216/14 218/25

220/8 226/20 227/13

227/16 227/25 228/24

229/16 230/13 231/16

232/13 232/17 233/4

233/7 233/11 233/13

243/11 243/13 261/6

**THE WITNESS: [47]** 6/5

45/19 53/3 80/13 80/18

80/21 80/23 85/16 86/17

91/22 92/25 94/21 100/5

102/17 102/20 103/8

105/21 107/21 107/24

108/2 108/4 110/6 123/3

125/14 125/18 126/6

126/13 127/23 132/3 133/9

141/2 144/6 153/18 156/5

168/25 177/17 179/4

179/22 180/10 183/16

185/20 187/19 188/7 188/9

188/11 188/15 196/5

**\$****\$100 [1]** 206/18**\$475 [1]** 86/2**'****'Now [1]** 61/6**.****.2 [12]** 34/13 92/1 92/10

93/23 104/23 106/2 112/16

113/12 119/19 125/21 126/2

130/5

**.3 [1]** 187/13**.6 [3]** 24/7 101/13 119/18**.8 [2]** 24/7 101/13**/****/s [1]** 262/17

|                                  |                                  |                                   |
|----------------------------------|----------------------------------|-----------------------------------|
| <b>0</b>                         | <b>1301 [1]</b> 2/21             | <b>2001 [1]</b> 158/9             |
| <b>0.6 [2]</b> 24/3 25/15        | <b>139 [1]</b> 63/21             | <b>2002 [1]</b> 158/16            |
| <b>0.8 [2]</b> 24/3 25/15        | <b>14 [14]</b> 4/19 39/10 39/17  | <b>2003 [1]</b> 158/16            |
| <b>08 [1]</b> 4/16               | 39/20 41/2 41/8 156/5            | <b>2014 [3]</b> 63/13 63/17       |
| <b>1</b>                         | 156/7 156/9 156/12               | 204/10                            |
| <b>1,000 [1]</b> 117/5           | 253/25 254/16 259/20             | <b>2015 [2]</b> 145/25 185/12     |
| <b>1.0 [17]</b> 24/4 87/22 97/18 | 260/2                            | <b>2016 [11]</b> 57/17 112/9      |
| 100/21 100/23 101/5 101/9        | <b>1400 [1]</b> 1/20             | 114/5 120/18 123/7 207/3          |
| 101/11 101/16 101/17 101/20      | <b>15 [15]</b> 4/20 5/12 57/11   | 209/14 209/16 226/4               |
| 101/22 102/6 102/8 168/11        | 57/12 59/3 59/6 114/5            | 237/18 238/9                      |
| 168/18 170/2                     | 133/3 139/15 139/18              | <b>2017 [7]</b> 61/5 236/17       |
| <b>1.3 [6]</b> 24/9 24/12 88/6   | 139/21 191/8 196/20              | 237/7 237/18 238/9                |
| 98/18 101/13 136/4               | 196/20 251/6                     | 241/14 241/18                     |
| <b>10 [9]</b> 4/13 62/13 83/24   | <b>150 [1]</b> 126/1             | <b>2018 [14]</b> 59/14 83/1       |
| 143/5 143/23 196/18              | <b>1500 [1]</b> 2/24             | 83/24 137/6 137/12 137/14         |
| 196/19 196/21 251/6              | <b>155 [1]</b> 126/1             | 137/20 137/23 167/11              |
| <b>10,000 [1]</b> 187/22         | <b>156 [3]</b> 60/20 60/22       | 225/1 225/2 231/19 232/1          |
| <b>10-minute [1]</b> 243/15      | 61/23                            | 238/22                            |
| <b>100 [6]</b> 2/24 53/9 58/11   | <b>157 [1]</b> 62/15             | <b>2019 [14]</b> 62/13 137/13     |
| 114/14 206/17 260/21             | <b>15th [3]</b> 112/9 207/3      | 137/18 145/15 167/9               |
| <b>10017 [1]</b> 2/8             | 262/15                           | 188/20 190/5 191/2 205/5          |
| <b>10:07 [1]</b> 78/25           | <b>16 [3]</b> 139/15 139/18      | 225/3 225/19 226/5                |
| <b>10:32 [1]</b> 79/1            | 139/21                           | 251/11 255/13                     |
| <b>10th [3]</b> 191/2 225/19     | <b>16,000 [1]</b> 12/16          | <b>202.239.5921 [1]</b> 2/22      |
| 262/20                           | <b>18 [4]</b> 57/17 123/18       | <b>202.616.4994 [1]</b> 1/21      |
| <b>11 [10]</b> 4/16 7/16 7/20    | 153/15 153/16                    | <b>2020 [7]</b> 43/22 157/13      |
| 8/3 8/6 86/23 100/8 145/7        | <b>189 [5]</b> 59/15 67/12 76/3  | 157/15 157/18 158/4               |
| 158/10 255/13                    | 83/5 257/16                      | 158/12 241/16                     |
| <b>11:59 a.m [1]</b> 144/9       | <b>19 [1]</b> 262/8              | <b>2021 [1]</b> 145/16            |
| <b>11th [1]</b> 188/20           | <b>1996 [3]</b> 157/21 158/2     | <b>2022 [6]</b> 1/8 5/2 8/1 17/23 |
| <b>12 [9]</b> 4/17 31/16 31/17   | 158/6                            | 31/4 262/15                       |
| 32/7 32/9 38/8 38/13             | <b>1999 [1]</b> 245/15           | <b>21 [1]</b> 139/22              |
| 198/25 260/18                    | <b>1:00 [1]</b> 144/8            | <b>21-degree [6]</b> 139/7        |
| <b>120 [2]</b> 2/11 130/23       | <b>2</b>                         | 139/10 139/17 212/9               |
| <b>120 miles [1]</b> 26/17       | <b>2.0 [13]</b> 88/3 88/16 97/19 | 213/13 222/16                     |
| <b>121 [1]</b> 13/22             | 100/21 100/23 101/1 101/5        | <b>212.972.9432 [1]</b> 2/9       |
| <b>12:58 [1]</b> 144/10          | 101/9 101/20 102/2 168/11        | <b>22 [1]</b> 110/12              |
| <b>13 [10]</b> 4/5 4/18 33/8     | 168/16 169/15                    | <b>230 [5]</b> 132/5 186/25       |
| 33/9 33/12 38/15 39/5            | <b>20 [3]</b> 14/23 68/3 86/7    | 187/13 187/21 187/24              |
| 50/25 149/6 252/3                | <b>20-minute [1]</b> 78/23       | <b>23219 [1]</b> 2/18             |
| <b>130 [2]</b> 246/16 248/24     | <b>20004 [1]</b> 2/21            | <b>24/7/365 [1]</b> 116/17        |
|                                  | <b>20005 [1]</b> 1/21            | <b>25 [2]</b> 25/9 94/9           |



**2**  
**25-hour [1]** 86/7  
**250 [1]** 187/22  
**26 [2]** 1/8 5/2  
**26th of [1]** 137/23  
**27th [1]** 197/20  
**288 [3]** 165/6 165/6  
 165/16  
**28th [1]** 2/8  
**29 [5]** 59/14 137/11 137/18  
 137/20 231/19  
**290 [1]** 168/21  
**291 [2]** 165/7 165/16  
**29th [3]** 83/1 137/14  
 225/1  
**2:00 [1]** 191/11

### **3**

**30 [1]** 78/13  
**30,000-foot [2]** 114/16  
 175/16  
**300 [3]** 11/19 187/23  
 246/17  
**300-page [1]** 258/15  
**302 [13]** 16/16 62/14 63/1  
 63/7 65/10 80/5 83/25  
 87/4 191/4 193/24 220/13  
 221/21 225/19  
**31st [5]** 8/1 17/23 19/6  
 19/8 19/17  
**32 [1]** 4/17  
**320 [1]** 66/2  
**326 [2]** 33/22 34/4  
**33 [1]** 194/5  
**34 [5]** 8/23 56/2 186/9  
 198/18 249/5  
**34-plus [1]** 195/18  
**3400 [2]** 12/15 12/16  
**346 [9]** 16/18 29/10 65/12  
 66/24 203/8 247/7 249/9  
 258/25 261/4  
**35 [1]** 130/24

**35 miles [1]** 26/21  
**36 [1]** 190/25  
**365 [1]** 116/17  
**36th [1]** 2/11  
**37 [2]** 167/8 208/10  
**3771 [1]** 197/6  
**379 [1]** 37/25  
**380 [1]** 37/25  
**383 [1]** 2/5  
**39 [1]** 4/18  
**3:15 [1]** 191/6  
**3:31 [1]** 191/12

### **4**

**4,000 feet [3]** 132/5  
 186/25 187/21  
**4.1 [1]** 86/23  
**4.3 [5]** 99/20 103/17  
 117/16 124/8 137/25  
**40 [1]** 222/19  
**40-degree [1]** 140/1  
**41 [1]** 4/19  
**42 [1]** 44/22  
**434 [1]** 204/9  
**444 [1]** 204/9  
**445 [1]** 204/10  
**466 [1]** 205/5  
**469.914.7610 [1]** 2/14  
**48 [1]** 12/17  
**480.375.8992 [1]** 2/25  
**485 [1]** 2/8  
**49 [2]** 171/20 239/1  
**4:21-cr-00005-O-1 [1]**  
 1/6

### **5**

**5.0 [1]** 148/6  
**500 [2]** 2/13 11/20  
**501 [1]** 262/20  
**51 [1]** 257/25  
**51 percent [1]** 17/5  
**532 [1]** 262/20  
**54 [2]** 18/5 18/9

**572 [1]** 204/9  
**59 [1]** 4/20  
**5:03 p.m [1]** 261/13  
**5th [1]** 247/9

### **6**

**60 [1]** 24/3  
**60602 [1]** 2/11  
**610 [31]** 16/15 59/12  
 59/14 60/9 65/9 67/12  
 67/23 68/3 76/4 77/12  
 83/2 87/3 90/2 96/7  
 137/6 138/4 138/7 140/8  
 192/10 220/12 221/20  
 222/6 222/7 223/7  
 223/24 224/2 224/5  
 224/10 224/11 225/1  
 259/22  
**615 [1]** 6/19  
**681 [1]** 40/1  
**688 [1]** 205/15  
**6:20 a.m [1]** 83/1  
**6:51 [2]** 112/21 112/23  
**6:53 p.m [3]** 113/2 113/7  
 113/25

### **7**

**700 [1]** 12/1  
**702 [6]** 218/25 219/1  
 235/14 236/4 236/6 250/6  
**703 [5]** 235/15 235/15  
 235/16 235/23 236/4  
**71 [3]** 251/5 252/3  
 253/25  
**737 [67]** 11/5 11/10 11/15  
 11/22 11/24 12/5 12/8 12/8  
 12/12 12/16 12/18 14/4  
 18/13 20/7 20/11 21/15  
 21/21 23/3 27/13 28/3  
 28/5 29/1 31/6 31/11 31/23  
 32/4 34/14 45/3 47/17  
 47/19 54/7 54/14 57/7  
 58/25 60/21 62/14 63/16

|   |  |  |
|---|--|--|
| <p><b>7</b></p> <p><b>737...</b> [30] 73/9 74/4<br/>75/22 87/1 87/24 118/7<br/>119/9 123/13 127/14 135/7<br/>138/2 157/6 157/9 157/14<br/>157/17 158/2 158/4 158/12<br/>158/14 158/18 158/20<br/>159/2 167/8 167/16 186/13<br/>193/8 194/13 200/7 239/7<br/>249/6</p> <p><b>737 MAX</b> [1] 15/3<br/><b>737-300</b> [1] 11/19<br/><b>737NG</b> [1] 54/6<br/><b>737NG/MAX</b> [1] 170/17<br/><b>737s</b> [2] 158/6 158/9<br/><b>75202</b> [1] 2/14<br/><b>757</b> [1] 158/7<br/><b>76102</b> [2] 2/24 262/20<br/><b>767</b> [1] 158/7<br/><b>777</b> [1] 146/1</p> | <p><b>A319/A320</b> [1] 157/12<br/><b>A320</b> [1] 157/12</p> <p><b>abiding</b> [4] 28/18 28/22<br/>28/22 75/12</p> <p><b>ability</b> [11] 22/6 22/15<br/>88/25 89/3 104/21 118/8<br/>118/10 149/9 175/19 262/7<br/>262/11</p> <p><b>abject</b> [1] 143/11</p> <p><b>able</b> [30] 6/20 14/4 22/23<br/>52/14 54/7 61/13 81/6<br/>83/20 85/11 114/15 115/2<br/>130/23 143/5 159/3 163/19<br/>174/8 183/18 192/11 193/17<br/>201/12 208/6 211/8 215/1<br/>215/2 215/17 217/24<br/>217/24 222/9 223/12<br/>231/6</p> <p><b>abnormal</b> [1] 76/22</p> <p><b>aboard</b> [4] 179/16 180/13<br/>192/18 193/5</p> <p><b>about</b> [279]</p> <p><b>above</b> [5] 26/21 32/4<br/>101/13 187/6 187/21</p> <p><b>absence</b> [2] 138/1 140/20</p> <p><b>absolute</b> [1] 71/2</p> <p><b>absolutely</b> [2] 205/23<br/>221/13</p> <p><b>accelerate</b> [2] 22/20<br/>187/22</p> <p><b>accelerator</b> [3] 26/17<br/>26/20 130/23</p> <p><b>accept</b> [3] 58/8 99/5<br/>250/21</p> <p><b>acceptable</b> [3] 192/2<br/>218/22 248/16</p> <p><b>accepted</b> [8] 18/14 28/1<br/>56/8 58/5 155/15 171/17<br/>248/9 254/24</p> <p><b>accepting</b> [1] 58/15</p> <p><b>access</b> [6] 17/16 52/14<br/>109/19 110/16 110/18 196/9</p> | <p><b>accident</b> [69] 9/1 9/6<br/>10/13 10/19 10/22 18/24<br/>46/11 46/18 50/14 50/15<br/>50/16 50/20 51/1 51/2<br/>51/5 51/10 51/16 52/17<br/>59/25 60/4 61/12 65/20<br/>65/22 66/3 66/9 66/21<br/>68/20 100/17 108/24<br/>129/15 133/13 147/22<br/>149/5 149/11 149/15 157/8<br/>157/9 161/19 162/11 162/22<br/>171/1 171/5 172/11 178/2<br/>193/20 200/11 221/19<br/>222/1 228/4 237/11<br/>237/20 238/9 238/15<br/>238/23 240/3 240/7<br/>243/8 244/14 244/18<br/>245/6 245/11 245/16<br/>245/18 246/11 246/19<br/>246/25 248/24 252/25<br/>259/6</p> <p><b>accidents</b> [24] 10/23 13/14<br/>13/20 13/22 16/17 29/11<br/>50/23 52/13 65/11 104/4<br/>108/11 118/3 118/15 120/3<br/>120/4 136/7 136/17 149/7<br/>240/15 240/19 241/9<br/>241/15 242/4 242/6</p> <p><b>accompanied</b> [1] 162/7</p> <p><b>accomplished</b> [1] 159/7</p> <p><b>accordance</b> [1] 246/21</p> <p><b>according</b> [2] 59/13 246/13</p> <p><b>account</b> [2] 6/14 215/18</p> <p><b>accurate</b> [15] 16/6 19/21<br/>36/25 45/13 97/12 132/22<br/>151/9 154/8 154/8 155/6<br/>155/21 183/25 189/3<br/>217/11 254/18</p> <p><b>accurately</b> [8] 29/6 44/7<br/>76/13 115/2 166/5 168/10<br/>168/16 169/1</p> <p><b>acknowledge</b> [1] 213/21</p> |
| <p><b>8</b></p> <p><b>8.18.16</b> [1] 4/20<br/><b>80 percent</b> [1] 24/4<br/><b>800</b> [2] 2/18 12/1<br/><b>801.585.5202</b> [1] 2/6<br/><b>8038</b> [2] 245/12 245/24<br/><b>804.698.2194</b> [1] 2/19<br/><b>817.850.6630</b> [1] 262/21<br/><b>84112</b> [1] 2/5<br/><b>8:30</b> [1] 1/10<br/><b>8:38</b> [1] 83/24</p>  |  |  |
| <p><b>9</b></p> <p><b>900</b> [2] 2/13 12/2<br/><b>900ER</b> [1] 12/2<br/><b>91-type</b> [1] 13/20<br/><b>918</b> [1] 205/5</p>   |  |  |
| <p><b>A</b></p> <p><b>a.m</b> [5] 1/10 78/25 79/1<br/>83/1 144/9<br/><b>A319</b> [1] 157/12</p>   |  |  |

|   |  |  |
|---|--|--|
| <p><b>A</b></p> <p><b>ACO [2]</b> 99/15 178/8</p> <p><b>across [2]</b> 30/9 212/18</p> <p><b>act [8]</b> 10/8 83/20 197/25<br/>202/24 203/10 203/12<br/>244/24 253/9</p> <p><b>acting [2]</b> 57/6 174/25</p> <p><b>action [7]</b> 76/23 159/6<br/>159/11 172/20 174/13 193/1<br/>193/2</p> <p><b>activate [7]</b> 23/20 24/2<br/>24/23 74/24 89/15 134/5<br/>203/4</p> <p><b>activated [5]</b> 68/2 101/15<br/>141/10 142/11 171/22</p> <p><b>activates [3]</b> 69/5 166/14<br/>173/10</p> <p><b>activating [3]</b> 69/11 132/8<br/>142/20</p> <p><b>activation [36]</b> 20/17<br/>60/13 63/3 63/8 70/3<br/>73/23 74/2 76/1 117/22<br/>138/8 140/9 141/13 141/19<br/>143/4 159/16 160/1 161/6<br/>161/22 168/2 169/16 190/7<br/>193/22 194/1 222/8 223/11<br/>225/10 229/14 230/6<br/>230/21 231/15 237/21<br/>238/15 239/16 241/23<br/>259/13 259/16</p> <p><b>activations [2]</b> 103/22<br/>192/12</p> <p><b>active [6]</b> 104/23 106/1<br/>112/16 113/12 160/12<br/>160/13</p> <p><b>activities [1]</b> 255/9</p> <p><b>activity [1]</b> 245/14</p> <p><b>actual [9]</b> 10/5 24/5 28/15<br/>29/7 69/17 84/7 115/5<br/>115/12 192/25</p> <p><b>actually [41]</b> 25/8 26/19<br/>27/22 43/12 62/11 66/18</p> | <p>72/13 87/10 88/1 97/6<br/>97/24 102/18 104/2 108/16<br/>109/2 115/4 115/7 115/12<br/>121/18 123/10 124/14 130/6<br/>139/21 155/17 156/8<br/>170/16 181/14 185/24<br/>192/18 205/6 214/21<br/>221/20 221/21 221/25<br/>225/16 228/2 229/12<br/>230/17 230/20 239/10<br/>240/16</p> <p><b>actuate [1]</b> 160/19</p> <p><b>AD [22]</b> 128/11 128/14<br/>128/16 133/20 164/6<br/>164/15 164/17 165/15<br/>165/16 165/23 166/1<br/>167/24 168/3 172/22<br/>173/17 173/25 174/12<br/>189/6 189/13 190/4<br/>238/20 255/6</p> <p><b>add [3]</b> 147/5 164/4 234/5</p> <p><b>add-on [1]</b> 147/5</p> <p><b>added [1]</b> 145/20</p> <p><b>adding [1]</b> 235/5</p> <p><b>addition [9]</b> 13/6 73/1<br/>89/13 147/5 162/6 163/18<br/>170/16 189/5 244/7</p> <p><b>additional [9]</b> 6/8 38/24<br/>99/14 105/4 186/5 189/20<br/>193/13 212/18 237/5</p> <p><b>Additionally [2]</b> 20/8<br/>190/9</p> <p><b>address [6]</b> 127/25 203/25<br/>212/20 213/2 220/10<br/>262/20</p> <p><b>addressed [6]</b> 57/1 117/10<br/>209/17 209/19 212/21<br/>228/21</p> <p><b>addressee [1]</b> 55/24</p> <p><b>addresses [1]</b> 227/15</p> <p><b>addressing [1]</b> 165/20</p> <p><b>adduced [2]</b> 35/23 236/13</p> | <p><b>adequate [6]</b> 189/11 189/15<br/>215/2 216/7 219/8 220/4</p> <p><b>adequately [5]</b> 36/18<br/>84/12 212/11 213/18<br/>218/20</p> <p><b>adjourned [2]</b> 78/25 191/11</p> <p><b>administered [2]</b> 6/4 14/16</p> <p><b>administrative [1]</b> 14/13</p> <p><b>administrative-type [1]</b><br/>14/13</p> <p><b>admissible [3]</b> 38/11<br/>235/19 241/5</p> <p><b>admission [7]</b> 8/3 32/7<br/>38/8 38/10 38/12 41/2<br/>41/3</p> <p><b>admissions [1]</b> 131/1</p> <p><b>admit [2]</b> 39/2 41/7</p> <p><b>admitted [14]</b> 7/19 8/5<br/>8/6 17/14 32/8 32/9 39/5<br/>41/8 53/1 53/6 59/4 59/6<br/>63/24 155/16</p> <p><b>admitting [1]</b> 43/19</p> <p><b>adopted [4]</b> 41/5 227/21<br/>227/23 228/18</p> <p><b>adoption [1]</b> 41/5</p> <p><b>advanced [1]</b> 8/17</p> <p><b>advantage [1]</b> 78/1</p> <p><b>advertised [1]</b> 83/8</p> <p><b>advice [1]</b> 49/15</p> <p><b>advisement [4]</b> 111/4 111/5<br/>261/7 261/8</p> <p><b>AEG [140]</b> 16/6 16/7 16/10<br/>19/20 19/21 23/12 25/20<br/>25/23 27/4 27/8 27/11<br/>28/3 28/20 28/21 29/17<br/>30/1 31/2 32/12 32/17<br/>32/18 32/20 32/21 33/19<br/>35/14 41/22 41/23 42/1<br/>42/18 43/3 43/16 43/22<br/>44/24 45/6 45/22 46/8<br/>49/19 50/5 52/4 64/1<br/>75/16 76/9 76/14 87/23</p> |
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|--|--|--|
| <p><b>A</b></p> <p><b>AEG...</b> [97] 91/5 91/9</p> <p>91/14 92/19 95/14 96/22</p> <p>99/18 106/4 106/9 125/5</p> <p>125/6 127/8 127/18 128/5</p> <p>128/17 130/15 132/14</p> <p>133/17 133/20 133/25</p> <p>133/25 134/14 134/21</p> <p>150/7 168/18 170/25 171/3</p> <p>171/6 171/22 171/23 172/11</p> <p>172/21 172/25 173/14</p> <p>173/16 174/11 174/14</p> <p>174/18 175/7 175/11 175/14</p> <p>176/19 176/20 177/7</p> <p>178/11 186/3 186/6 186/12</p> <p>190/15 191/2 191/3 195/4</p> <p>195/8 195/13 198/3 198/8</p> <p>198/14 198/21 198/25</p> <p>199/7 200/4 200/14</p> <p>200/20 200/24 221/8</p> <p>224/14 224/19 224/22</p> <p>226/22 227/6 227/8</p> <p>229/3 230/5 230/7</p> <p>230/25 231/4 231/7 231/7</p> <p>231/21 231/24 231/25</p> <p>237/19 237/19 237/23</p> <p>238/4 238/25 239/2</p> <p>239/3 240/22 240/23</p> <p>241/1 241/3 249/14 255/14</p> <p>257/20 259/20 260/3</p> <p><b>AEG's</b> [6] 30/13 42/22</p> <p>45/2 46/2 176/8 184/8</p> <p><b>aeronautic</b> [1] 16/25</p> <p><b>affect</b> [1] 88/11</p> <p><b>affected</b> [3] 34/13 34/15</p> <p>205/10</p> <p><b>affirmative</b> [3] 135/22</p> <p>147/15 179/12</p> <p><b>AFM</b> [1] 190/11</p> <p><b>after</b> [66] 30/21 35/1</p> <p>59/19 62/15 64/6 83/2</p> <p>83/9 83/10 83/25 89/8</p> | <p>90/5 98/20 100/15 100/16</p> <p>100/17 104/12 104/17</p> <p>108/23 110/25 118/3 118/14</p> <p>120/2 120/25 121/1 121/19</p> <p>127/12 127/13 127/17</p> <p>129/4 129/14 132/14 134/1</p> <p>134/14 134/21 134/25</p> <p>141/6 146/9 160/18 161/18</p> <p>163/22 165/18 165/25</p> <p>170/25 171/11 172/2 176/7</p> <p>188/21 210/13 222/23</p> <p>224/7 224/11 224/13</p> <p>224/19 225/2 225/8 226/1</p> <p>228/16 231/20 238/22</p> <p>239/1 241/8 242/3 243/7</p> <p>255/13 258/1 259/20</p> <p><b>aftermarket</b> [1] 9/20</p> <p><b>afternoon</b> [3] 144/13</p> <p>144/17 144/18</p> <p><b>again</b> [80] 24/6 24/14</p> <p>27/24 29/21 31/9 33/5</p> <p>34/3 40/2 44/15 44/18</p> <p>54/21 58/23 61/1 65/6</p> <p>66/9 67/1 70/9 71/11 82/8</p> <p>85/23 88/5 89/23 89/23</p> <p>94/7 100/2 100/21 101/1</p> <p>103/16 105/22 110/18 111/7</p> <p>117/16 118/2 118/14 119/13</p> <p>121/4 121/20 123/15 129/9</p> <p>130/14 130/22 132/3</p> <p>132/25 134/3 134/4</p> <p>134/24 135/5 153/18 155/4</p> <p>158/13 163/13 163/23</p> <p>164/6 164/8 165/11 168/3</p> <p>171/6 172/15 173/3 178/7</p> <p>186/25 199/11 200/21</p> <p>201/16 203/14 226/1</p> <p>238/2 241/24 243/6 247/8</p> <p>247/17 249/5 249/10</p> <p>251/18 252/12 253/4</p> <p>253/24 254/19 255/20</p> <p>260/10</p> | <p><b>against</b> [13] 28/12 38/12</p> <p>86/16 86/17 146/8 200/18</p> <p>201/19 201/22 205/14</p> <p>248/10 250/13 252/15</p> <p>260/25</p> <p><b>agency</b> [2] 195/16 255/4</p> <p><b>Ages</b> [2] 54/24 55/9</p> <p><b>aggrieved</b> [1] 214/20</p> <p><b>ago</b> [20] 12/6 12/17 14/5</p> <p>19/7 35/22 42/16 43/2</p> <p>49/24 65/3 114/14 131/17</p> <p>168/13 198/17 198/25</p> <p>199/6 199/12 201/15</p> <p>244/13 255/18 259/9</p> <p><b>Agra</b> [1] 250/4</p> <p><b>agree</b> [14] 28/10 31/5</p> <p>76/11 93/18 94/6 125/18</p> <p>126/13 136/10 141/2</p> <p>182/25 184/24 206/11</p> <p>206/15 241/21</p> <p><b>agreed</b> [5] 177/12 205/25</p> <p>238/5 238/6 244/5</p> <p><b>agreed-upon</b> [1] 205/25</p> <p><b>Agreement</b> [3] 18/3 18/5</p> <p>90/10</p> <p><b>aha</b> [1] 74/14</p> <p><b>ahead</b> [18] 7/5 18/22 31/1</p> <p>45/18 81/10 82/3 82/7</p> <p>82/9 110/1 119/25 131/18</p> <p>144/7 162/21 177/21 179/5</p> <p>181/20 207/20 211/25</p> <p><b>air</b> [91] 16/15 59/12 59/14</p> <p>61/6 61/14 61/20 65/9</p> <p>67/1 67/12 67/23 68/3</p> <p>68/24 76/10 77/3 77/12</p> <p>79/11 83/2 87/3 90/2 96/7</p> <p>97/19 108/24 127/13 129/3</p> <p>132/14 132/16 134/1 134/15</p> <p>134/21 134/25 136/19</p> <p>137/5 138/4 138/7 138/14</p> <p>139/6 140/8 157/8 157/9</p> <p>161/18 162/11 169/5 169/7</p> |
|--|--|--|



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|--|---|---|
| <p><b>A</b><br/> <b>air...</b> [48] 171/1 171/4<br/> 171/9 171/21 172/3 172/11<br/> 173/23 178/2 188/21<br/> 192/10 192/18 193/5<br/> 193/13 193/23 193/23<br/> 199/9 200/16 212/11<br/> 220/12 221/20 222/5<br/> 223/7 223/24 224/2<br/> 224/2 224/5 224/10<br/> 224/11 224/19 225/1<br/> 225/7 225/9 225/23<br/> 225/25 226/1 227/20<br/> 227/20 229/9 229/9<br/> 231/20 231/20 238/23<br/> 239/2 239/20 257/14<br/> 258/1 259/21 259/22<br/> <b>Airbus</b> [3] 157/11 158/1<br/> 158/3<br/> <b>aircraft</b> [111] 9/19 9/20<br/> 10/11 10/20 11/5 11/8 11/10<br/> 11/11 11/14 11/15 11/17<br/> 11/21 11/25 12/1 12/3 13/14<br/> 14/7 14/9 14/10 14/13 20/9<br/> 21/20 21/21 22/2 22/3<br/> 22/7 22/19 22/21 22/23<br/> 22/25 24/9 24/14 24/18<br/> 30/9 30/17 46/2 46/6<br/> 47/17 48/14 48/24 49/4<br/> 49/17 62/18 68/4 68/8<br/> 69/3 69/11 71/7 71/9 71/15<br/> 71/25 72/5 74/7 75/4<br/> 75/5 75/23 76/16 78/9<br/> 84/16 84/23 84/24 85/11<br/> 87/1 88/2 88/8 88/12<br/> 92/14 99/4 99/6 99/12<br/> 103/5 103/5 107/1 115/12<br/> 116/1 121/8 125/24 136/14<br/> 136/17 146/4 146/15<br/> 147/25 148/1 159/7 160/2<br/> 162/3 166/4 169/18 170/6<br/> 170/8 170/9 174/6 175/23</p> | <p>179/16 180/13 181/23 182/1<br/> 182/3 182/4 185/3 187/19<br/> 192/18 193/20 194/8<br/> 200/7 200/12 202/5<br/> 222/11 222/11 230/9<br/> 239/19<br/> <b>airframe</b> [9] 9/16 10/1<br/> 10/18 47/10 48/20 114/14<br/> 115/24 116/1 195/20<br/> <b>airline</b> [12] 11/1 11/1 14/10<br/> 42/8 55/21 56/15 57/21<br/> 61/17 62/1 62/12 183/4<br/> 191/4<br/> <b>airliner</b> [1] 46/14<br/> <b>airlines</b> [30] 16/16 42/4<br/> 49/7 62/3 62/14 63/1 63/7<br/> 63/10 63/14 65/9 83/25<br/> 87/3 99/8 183/5 183/7<br/> 189/21 190/20 193/24<br/> 199/10 220/13 221/14<br/> 221/21 225/4 225/8 225/8<br/> 225/12 225/16 225/18<br/> 226/4 243/4<br/> <b>airman</b> [2] 14/16 14/23<br/> <b>airplane</b> [30] 22/12 24/11<br/> 24/17 69/19 69/23 70/3<br/> 70/19 72/2 73/19 74/22<br/> 89/7 102/10 102/12 114/20<br/> 114/23 115/7 120/6 125/23<br/> 133/13 136/11 146/17<br/> 159/24 163/10 164/20<br/> 166/7 168/7 168/17 173/4<br/> 182/6 189/9<br/> <b>airplanes</b> [1] 116/16<br/> <b>airspeed</b> [6] 24/5 70/17<br/> 70/19 70/24 73/2 187/13<br/> <b>airspeeds</b> [4] 70/22 70/22<br/> 187/12 187/23<br/> <b>airworthiness</b> [15] 49/18<br/> 128/6 128/18 132/20<br/> 133/20 134/2 161/20 164/1<br/> 164/3 188/19 189/1 224/23</p> | <p>225/13 232/2 259/19<br/> <b>airworthy</b> [2] 48/9 99/7<br/> <b>akin</b> [1] 130/22<br/> <b>albeit</b> [1] 107/7<br/> <b>alert</b> [17] 40/11 91/24<br/> 94/23 109/5 110/8 112/13<br/> 112/16 113/11 119/17 121/2<br/> 124/11 124/14 124/15<br/> 125/16 129/12 186/17<br/> 207/3<br/> <b>alerted</b> [1] 107/5<br/> <b>alerts</b> [7] 72/16 72/19<br/> 73/1 73/8 73/16 77/16<br/> 84/19<br/> <b>all</b> [148] 6/3 13/9 13/21<br/> 15/5 15/25 17/10 17/18<br/> 18/9 20/19 23/4 24/22<br/> 25/15 27/24 30/9 30/21<br/> 33/5 34/19 36/23 37/22<br/> 38/2 40/10 44/11 44/21<br/> 46/3 46/19 49/4 50/3<br/> 50/3 50/8 51/4 52/10<br/> 52/15 52/25 55/16 56/8<br/> 57/9 58/11 58/13 59/14<br/> 60/15 62/15 64/9 65/5<br/> 67/6 71/9 72/10 74/20<br/> 74/23 77/20 78/21 83/13<br/> 85/4 86/25 87/24 89/2<br/> 89/18 92/1 93/12 94/4<br/> 95/8 95/25 97/15 97/23<br/> 98/6 100/14 101/6 101/12<br/> 101/15 101/17 101/19<br/> 101/23 106/18 106/21<br/> 107/3 113/21 114/13 118/16<br/> 123/1 123/20 128/9 135/12<br/> 136/17 149/8 151/25<br/> 157/13 158/22 158/23<br/> 162/8 162/15 162/17 163/7<br/> 163/13 167/25 170/17<br/> 170/22 174/9 175/16<br/> 175/21 177/3 179/5 180/14<br/> 182/23 190/6 191/13 192/6</p> |
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|                                    |                                   |                                  |
|------------------------------------|-----------------------------------|----------------------------------|
| <b>A</b>                           | 122/21 189/7 233/20               | 200/6 200/6                      |
| <b>all...</b> [43] 197/4 198/13    | <b>also</b> [67] 5/18 10/12 11/19 | <b>American-manufactured</b> [1] |
| 199/1 201/13 203/13                | 12/25 13/7 13/10 14/11            | 200/6                            |
| 203/20 206/20 209/9                | 16/12 16/13 18/22 38/10           | <b>American-marketed</b> [1]     |
| 209/10 209/21 209/22               | 41/4 42/10 42/16 51/14            | 200/6                            |
| 213/16 215/11 215/15               | 61/5 61/22 63/5 66/8 74/9         | <b>American-produced</b> [1]     |
| 215/21 215/23 216/9 218/6          | 76/19 84/18 88/25 89/5            | 200/6                            |
| 218/14 220/15 220/23               | 89/13 91/18 92/17 100/8           | <b>amiss</b> [1] 107/10          |
| 221/5 223/24 225/22                | 115/6 118/6 118/24 129/20         | <b>among</b> [4] 29/10 54/2      |
| 228/10 230/5 236/19                | 135/23 136/16 138/7 139/5         | 155/20 237/21                    |
| 237/14 237/25 241/10               | 141/2 141/12 162/7 163/24         | <b>amongst</b> [1] 154/2         |
| 244/17 245/23 247/1                | 164/11 164/18 171/23 186/8        | <b>amount</b> [5] 71/15 127/4    |
| 247/12 250/1 254/19                | 204/8 204/15 204/21               | 135/6 197/12 248/7               |
| 256/19 259/3 259/4 261/7           | 204/23 205/2 208/17               | <b>ample</b> [2] 248/7 256/4     |
| 261/8 261/10 261/12                | 212/15 212/23 214/1 219/8         | <b>amplified</b> [1] 83/15       |
| <b>allegation</b> [3] 119/7 191/25 | 224/6 230/11 231/13               | <b>ANAC</b> [3] 54/24 55/12      |
| 240/13                             | 235/4 235/10 239/20               | 55/12                            |
| <b>allegations</b> [2] 99/10       | 242/13 246/4 246/9                | <b>analogy</b> [2] 26/16 52/5    |
| 146/13                             | 251/23 258/2 259/18               | <b>analysis</b> [27] 30/22 105/5 |
| <b>allege</b> [6] 91/11 93/11 94/3 | 260/9                             | 126/21 126/22 127/3              |
| 95/11 96/20 150/9                  | <b>alter</b> [1] 257/16           | 129/15 133/12 143/3              |
| <b>alleged</b> [6] 55/6 91/8       | <b>alteration</b> [1] 97/18       | 143/18 147/20 149/3 176/5        |
| 92/18 104/19 118/17 221/7          | <b>altered</b> [3] 28/9 96/17     | 176/6 176/6 203/17               |
| <b>allegedly</b> [1] 111/20        | 101/3                             | 205/25 210/3 219/17              |
| <b>alleviate</b> [1] 72/1          | <b>alternate</b> [1] 13/1         | 220/19 227/14 233/23             |
| <b>allotted</b> [1] 83/20          | <b>although</b> [3] 166/4 245/9   | 237/14 260/13 260/13             |
| <b>allow</b> [7] 13/3 26/16 33/23  | 256/20                            | 260/19 260/20 260/21             |
| 39/3 53/22 109/22 250/11           | <b>altitude</b> [4] 69/10 70/19   | <b>analyze</b> [1] 185/5         |
| <b>allowed</b> [8] 10/3 101/1      | 73/2 78/8                         | <b>angle</b> [30] 22/18 24/14    |
| 108/12 122/1 128/14 145/21         | <b>always</b> [5] 100/23 136/15   | 24/15 24/19 24/20 26/13          |
| 187/22 213/2                       | 136/15 169/16 251/15              | 26/14 68/6 68/12 70/12           |
| <b>allowing</b> [1] 88/9           | <b>am</b> [24] 13/13 17/1 18/7    | 70/14 73/4 88/8 96/13            |
| <b>allows</b> [2] 65/17 235/14     | 19/25 20/5 21/2 23/16             | 98/19 102/4 102/7 102/11         |
| <b>alluding</b> [1] 93/3           | 23/23 51/23 60/23 60/24           | 102/22 104/7 118/25 139/1        |
| <b>almost</b> [6] 12/15 71/7       | 77/7 78/8 102/22 125/25           | 139/6 140/2 140/6 169/15         |
| 78/11 140/1 217/19 218/21          | 127/16 127/20 127/23              | 169/18 212/9 213/14              |
| <b>alone</b> [2] 126/18 212/12     | 137/8 137/10 138/12 143/1         | 222/14                           |
| <b>along</b> [4] 9/9 61/18 72/16   | 148/7 167/14                      | <b>angles</b> [2] 169/10 169/12  |
| 136/6                              | <b>Ameen</b> [1] 5/24             | <b>animal</b> [1] 72/25          |
| <b>already</b> [13] 6/21 18/14     | <b>AMERICA</b> [2] 1/6 41/4       | <b>annex</b> [4] 4/5 50/25 56/2  |
| 38/9 54/6 58/7 59/23               | <b>American</b> [8] 47/20 47/23   | 149/6                            |
| 79/3 82/7 83/17 122/8              | 48/1 64/19 64/25 200/6            | <b>anomalies</b> [1] 29/6        |

|                                   |                                  |                                   |
|-----------------------------------|----------------------------------|-----------------------------------|
| <b>A</b>                          | 240/14 240/18 241/15             | 171/10 174/4                      |
| <b>another [23]</b> 29/21 46/13   | 243/9 249/12 250/15              | <b>appeal [1]</b> 244/23          |
| 55/16 57/10 61/22 76/7            | <b>anybody [3]</b> 209/1 232/18  | <b>appear [5]</b> 54/11 61/13     |
| 78/12 81/24 83/23 84/20           | 238/8                            | 62/22 138/9 166/4                 |
| 107/4 107/6 107/7 112/10          | <b>anymore [1]</b> 11/21         | <b>appeared [5]</b> 92/3 92/9     |
| 124/6 139/22 158/11 195/2         | <b>anyone [6]</b> 12/18 54/6     | 150/5 150/20 262/9                |
| 234/11 240/6 246/14               | 111/17 125/22 179/19             | <b>appears [7]</b> 53/16 54/13    |
| 255/16 259/10                     | 180/12                           | 55/22 57/17 58/23 60/6            |
| <b>answer [25]</b> 28/24 34/15    | <b>anything [36]</b> 10/22 50/20 | 112/13                            |
| 34/18 34/25 35/5 45/18            | 51/11 52/2 79/2 96/7             | <b>APPELLATE [1]</b> 2/4          |
| 46/17 72/25 86/6 92/22            | 98/22 103/13 104/1 106/13        | <b>Appendix [2]</b> 8/8 17/23     |
| 92/23 94/22 96/23 96/25           | 106/16 114/3 117/24 118/19       | <b>APPLEBAUM [1]</b> 2/7          |
| 104/21 105/19 119/12              | 119/8 124/21 125/22 131/9        | <b>apples [3]</b> 104/9 104/15    |
| 120/16 123/2 133/7 142/20         | 131/9 134/12 135/19              | 130/14                            |
| 155/14 174/20 183/18              | 135/20 143/7 143/16 144/1        | <b>applicable [2]</b> 145/22      |
| 219/13                            | 150/9 153/16 165/23              | 158/25                            |
| <b>answered [1]</b> 135/21        | 207/17 212/6 230/23              | <b>application [1]</b> 187/9      |
| <b>answering [1]</b> 179/11       | 233/11 248/6 248/7               | <b>applied [2]</b> 160/2 173/23   |
| <b>answers [1]</b> 151/1          | 249/16 257/14                    | <b>applies [2]</b> 77/9 257/19    |
| <b>anticipate [5]</b> 96/2 191/18 | <b>anytime [2]</b> 14/6 108/20   | <b>apply [3]</b> 149/11 250/19    |
| 228/7 228/8 228/8                 | <b>anywhere [5]</b> 98/23 113/14 | 251/21                            |
| <b>anticipated [2]</b> 190/4      | 129/18 130/11 223/12             | <b>applying [3]</b> 147/11 147/16 |
| 241/23                            | <b>AOA [38]</b> 70/14 88/9       | 252/11                            |
| <b>any [77]</b> 8/17 10/18 10/19  | 88/14 97/5 98/8 98/25            | <b>appreciate [1]</b> 104/14      |
| 11/5 11/17 12/1 14/2 19/8         | 100/24 101/2 101/14 102/10       | <b>appreciates [1]</b> 233/16     |
| 20/1 20/14 29/6 30/18             | 102/12 102/24 103/2              | <b>apprised [1]</b> 208/7         |
| 32/13 34/9 41/24 46/1             | 103/15 103/23 104/3              | <b>approach [8]</b> 21/4 31/14    |
| 48/23 48/24 50/16 51/1            | 106/12 113/16 124/11             | 33/6 39/13 57/10 110/5            |
| 52/7 53/20 53/22 54/9             | 124/15 127/5 130/13              | 144/22 151/2                      |
| 54/13 54/13 54/17 60/12           | 130/17 131/7 134/10 162/7        | <b>approaching [1]</b> 169/5      |
| 63/2 69/20 70/10 72/16            | 169/17 189/10 189/14             | <b>appropriate [17]</b> 30/16     |
| 75/25 79/15 83/4 84/22            | 189/17 190/7 212/8 219/11        | 31/6 62/19 64/21 76/22            |
| 86/25 91/12 99/11 117/4           | 220/25 223/8 228/9               | 99/19 173/2 175/19 176/1          |
| 119/11 124/16 136/14              | 237/22 237/25                    | 181/10 182/9 184/12 214/17        |
| 140/16 140/18 153/9 154/5         | <b>apologies [3]</b> 91/23 120/1 | 235/24 239/25 245/19              |
| 155/2 157/2 171/3 176/2           | 165/10                           | 245/21                            |
| 178/7 178/24 179/3 182/16         | <b>apologize [1]</b> 38/15       | <b>appropriately [4]</b> 69/14    |
| 183/12 184/15 186/5               | <b>apology [1]</b> 191/22        | 80/21 80/22 83/20                 |
| 186/12 187/9 196/6 196/13         | <b>apparent [4]</b> 55/21 56/3   | <b>appropriateness [1]</b> 116/4  |
| 199/15 200/15 210/16              | 56/15 61/16                      | <b>approval [1]</b> 31/23         |
| 225/12 230/10 233/15              | <b>apparently [6]</b> 56/20      | <b>approved [3]</b> 48/9 51/5     |
| 233/17 239/7 240/13               | 109/16 120/16 128/25             | 209/21                            |

|   |   |   |
|---|---|---|
| <b>A</b><br><b>approximately [9]</b> 8/21<br>8/23 12/15 67/4 81/22<br>83/1 83/24 86/4 133/3<br><b>April [1]</b> 190/5<br><b>ARDC [2]</b> 185/11 185/14<br><b>are [231]</b> 5/19 6/11 8/11<br>9/23 10/25 11/20 12/16<br>14/7 14/12 14/18 15/15<br>15/16 16/2 16/4 16/11<br>16/24 18/4 18/8 18/8 18/10<br>18/23 19/24 20/23 20/25<br>22/14 22/23 23/14 23/21<br>30/15 34/20 35/7 36/13<br>37/7 37/7 39/11 41/24<br>42/16 42/24 46/8 46/14<br>46/15 46/22 51/4 51/5<br>51/19 51/20 51/22 52/23<br>53/5 54/12 54/23 55/3<br>55/8 56/17 56/20 56/23<br>59/11 60/16 60/22 63/11<br>64/3 66/13 66/16 67/9<br>69/2 70/14 70/20 71/20<br>72/16 72/16 73/6 74/21<br>74/23 77/5 78/11 78/21<br>78/22 84/20 85/21 88/23<br>89/1 89/2 90/6 90/21<br>90/24 91/16 91/18 95/22<br>99/2 99/6 100/13 100/14<br>101/10 101/14 105/10<br>109/18 111/12 112/13 112/15<br>113/4 113/25 114/16 114/17<br>114/21 115/7 123/11 123/14<br>125/19 126/20 127/12<br>127/17 128/9 128/17 135/1<br>136/11 136/15 136/16 137/4<br>137/11 137/22 138/6<br>138/10 138/14 140/5 141/2<br>141/6 142/24 143/2 143/12<br>143/14 143/14 143/24<br>147/16 147/25 149/12<br>151/6 154/6 154/17 154/17 | 154/18 155/21 158/15<br>159/7 160/1 161/19 164/16<br>167/12 167/12 172/15<br>175/3 176/22 176/23 177/1<br>177/4 179/18 180/6 180/21<br>182/16 189/5 189/24 190/6<br>192/8 197/2 197/24<br>200/10 200/25 201/3<br>201/12 202/13 202/18<br>202/21 202/22 204/4<br>206/16 206/18 208/25<br>210/11 213/7 213/8 213/22<br>214/25 216/22 216/23<br>216/24 217/10 218/4<br>218/19 220/1 220/3 223/7<br>224/3 227/18 227/19<br>229/7 231/2 232/15 234/7<br>235/17 235/18 236/3<br>236/8 238/3 238/6<br>240/24 241/5 242/25<br>243/20 243/21 243/23<br>244/1 244/1 244/3 246/2<br>246/10 246/12 246/16<br>246/22 247/1 247/3<br>248/12 249/20 250/20<br>251/7 254/13 255/9 255/9<br>256/10 258/17 261/4<br>261/11 262/9<br><b>area [3]</b> 10/7 82/12 150/6<br><b>areas [2]</b> 150/25 151/13<br><b>Argentina [1]</b> 56/8<br><b>arguably [1]</b> 132/6<br><b>argue [1]</b> 248/6<br><b>argued [2]</b> 212/16 255/22<br><b>arguing [1]</b> 244/4<br><b>argument [22]</b> 39/23 40/2<br>40/4 40/20 196/18 196/22<br>197/10 199/21 205/4<br>209/3 211/6 211/15 211/16<br>213/5 231/16 232/20<br>233/6 233/7 243/17<br>252/23 254/20 254/20 | <b>arguments [4]</b> 36/8 146/17<br>202/24 218/7<br><b>around [19]</b> 15/10 48/8<br>51/20 58/14 64/7 144/8<br>157/22 158/2 166/3 167/18<br>170/11 200/8 201/1 203/9<br>225/5 228/16 233/20<br>242/2 254/25<br><b>arrest [1]</b> 69/15<br><b>arrived [3]</b> 15/13 194/12<br>194/15<br><b>article [2]</b> 202/10 252/7<br><b>articles [4]</b> 214/13 218/11<br>220/1 220/2<br><b>as [288]</b><br><b>as installed [1]</b> 168/17<br><b>ascertain [1]</b> 149/9<br><b>aside [1]</b> 208/24<br><b>ask [34]</b> 6/7 6/25 7/2<br>13/24 18/15 34/8 38/17<br>40/4 45/19 56/6 63/23<br>78/16 92/24 122/11 124/6<br>129/9 140/24 141/4 149/20<br>153/2 153/4 153/18 156/20<br>173/14 174/18 176/20<br>177/21 181/20 183/16<br>183/17 216/14 226/20<br>245/1 256/9<br><b>asked [32]</b> 79/19 92/7<br>106/15 136/2 144/25<br>147/10 147/13 148/17<br>149/19 150/16 153/14<br>170/24 177/25 179/11<br>181/8 181/8 185/24 194/10<br>205/9 206/2 233/20<br>233/21 234/10 238/4<br>239/17 241/7 241/19<br>242/13 248/11 249/11<br>258/21 258/21<br><b>asking [12]</b> 61/20 94/13<br>97/4 101/14 104/17 131/4<br>133/23 135/16 150/17 |
|---|---|---|



|                                  |                            |                                  |
|----------------------------------|----------------------------|----------------------------------|
| <b>A</b>                         | 48/19 50/13 50/19 52/21    | 205/15 206/1 206/3 206/6         |
| <b>asking...</b> [3] 154/20      | 52/24 53/1 53/5 59/2       | 206/21 206/22 208/2              |
| 179/19 219/1                     | 61/22 61/24 63/21 66/21    | 208/9 208/11 209/10              |
| <b>aspect</b> [5] 95/13 96/21    | 70/18 70/24 73/20 76/7     | 209/24 210/24 212/2              |
| 98/3 116/19 201/25               | 76/19 78/15 78/25 79/1     | 213/23 214/9 217/2               |
| <b>aspects</b> [7] 93/13 94/4    | 81/11 81/14 82/25 83/5     | 219/25 220/15 223/7              |
| 95/2 182/14 182/20               | 83/13 84/22 86/2 86/24     | 224/14 224/14 224/18             |
| 182/24 221/5                     | 92/1 92/20 93/19 93/20     | 225/20 225/21 229/3              |
| <b>assert</b> [2] 116/2 173/4    | 93/23 94/8 94/19 94/24     | 229/6 229/17 230/1               |
| <b>assertion</b> [1] 44/18       | 95/23 96/12 96/14 104/4    | 231/20 231/25 232/14             |
| <b>assess</b> [3] 76/13 127/9    | 105/7 105/25 108/22        | 232/14 232/16 232/17             |
| 213/23                           | 109/10 112/10 112/21       | 233/17 233/17 234/23             |
| <b>assessing</b> [1] 199/15      | 112/23 113/1 113/6 113/10  | 235/2 238/24 240/21              |
| <b>assessment</b> [3] 46/5       | 113/15 113/25 117/4 118/13 | 241/17 242/18 245/15             |
| 126/25 127/2                     | 118/17 118/17 119/19 121/6 | 248/10 248/12 249/22             |
| <b>assessments</b> [1] 127/2     | 121/11 122/1 123/16 124/13 | 250/22 251/5 252/3 252/5         |
| <b>assistance</b> [2] 49/1 153/1 | 128/18 128/19 129/4 130/2  | 253/15 253/24 254/23             |
| <b>ASSISTANT</b> [1] 1/19        | 130/16 130/24 131/12       | 255/18 258/2 258/11              |
| <b>assisting</b> [1] 12/18       | 131/14 131/19 132/5 133/6  | 259/22 259/23 260/7              |
| <b>associated</b> [8] 20/10 71/5 | 133/6 133/17 134/9 134/21  | 260/11 261/1 261/13              |
| 72/1 78/19 146/22 162/6          | 134/25 136/16 137/2        | <b>at it</b> [1] 131/19          |
| 190/3 253/17                     | 139/14 139/15 139/19 140/1 | <b>attached</b> [1] 90/21        |
| <b>assume</b> [12] 15/24 28/17   | 140/18 142/10 144/9        | <b>attack</b> [31] 22/18 24/14   |
| 37/1 63/24 64/6 69/2             | 144/10 144/24 145/20       | 24/15 24/19 24/20 26/13          |
| 75/12 105/23 182/23              | 145/25 157/9 158/19        | 26/14 68/6 68/13 70/13           |
| 232/25 245/18 258/22             | 158/24 161/18 165/4 167/8  | 70/14 73/4 88/9 96/13            |
| <b>assuming</b> [5] 15/22 37/3   | 167/9 167/16 169/5 169/10  | 98/19 102/4 102/7 102/11         |
| 56/14 95/22 227/6                | 169/12 169/18 170/6        | 102/22 104/7 118/25 139/2        |
| <b>assumption</b> [4] 37/4 97/25 | 170/23 171/8 171/10 171/11 | 139/6 140/7 169/10 169/12        |
| 143/9 143/20                     | 173/6 173/18 173/25 174/2  | 169/15 169/18 212/10             |
| <b>assumptions</b> [2] 143/14    | 174/4 174/11 174/13 180/5  | 213/14 222/14                    |
| 233/2                            | 181/16 183/3 186/1 186/25  | <b>attacking</b> [1] 246/12      |
| <b>asymptotically</b> [1] 83/16  | 187/12 187/20 187/20       | <b>attempt</b> [2] 21/17 234/2   |
| <b>at</b> [251] 2/3 6/22 8/2     | 188/2 188/3 189/21 190/17  | <b>attempted</b> [1] 117/21      |
| 10/7 10/17 11/11 11/18           | 191/6 191/11 191/12 191/21 | <b>attempting</b> [1] 69/8       |
| 14/16 14/20 14/23 14/24          | 193/2 193/21 194/12        | <b>attend</b> [6] 35/11 35/13    |
| 15/10 15/13 15/15 15/22          | 194/15 195/12 196/7 196/9  | 48/21 48/24 49/5 107/22          |
| 17/15 17/16 19/5 20/4            | 196/21 196/23 197/16       | <b>attendants</b> [4] 11/16 84/9 |
| 26/19 26/21 27/16 30/3           | 197/23 198/11 199/17       | 84/13 84/14                      |
| 30/4 30/24 31/9 32/3             | 200/17 203/7 204/8 204/9   | <b>attended</b> [1] 108/14       |
| 32/6 33/19 35/13 38/7            | 204/13 204/16 205/1        | <b>attending</b> [1] 176/4       |
| 41/1 41/21 43/13 47/18           | 205/3 205/12 205/14        | <b>attention</b> [15] 33/21 40/1 |

|  |  |   |
|--|--|---|
| <p><b>A</b></p> <p><b>attention...</b> [13] 53/17<br/>57/19 60/15 60/25 67/11<br/>73/13 136/23 152/9 152/12<br/>164/6 186/18 202/7<br/>233/17</p> <p><b>attenuated</b> [1] 242/23</p> <p><b>attest</b> [2] 68/21 178/21</p> <p><b>attitude</b> [4] 22/7 69/9<br/>89/22 90/1</p> <p><b>Attorney</b> [1] 145/25</p> <p><b>attorneys</b> [7] 1/19 36/5<br/>36/7 36/19 152/20 153/1<br/>244/3</p> <p><b>audible</b> [2] 68/7 84/21</p> <p><b>AUGUST</b> [4] 1/8 5/2 57/17<br/>247/9</p> <p><b>August 18</b> [1] 57/17</p> <p><b>August 5th</b> [1] 247/9</p> <p><b>authored</b> [2] 7/25 9/3</p> <p><b>authorities</b> [21] 51/9<br/>52/17 54/23 56/8 59/20<br/>60/7 60/11 61/12 62/20<br/>62/25 63/5 64/8 64/8<br/>64/21 64/21 67/15 67/17<br/>76/19 76/20 246/13<br/>254/25</p> <p><b>authority</b> [11] 47/14 51/15<br/>55/11 55/15 58/4 58/10<br/>87/14 87/19 88/13 88/25<br/>200/4</p> <p><b>authority's</b> [1] 215/14</p> <p><b>authorization</b> [1] 194/15</p> <p><b>authorized</b> [3] 10/3 10/8<br/>174/24</p> <p><b>automation</b> [1] 159/23</p> <p><b>autopilot</b> [8] 159/24 160/5<br/>160/5 160/8 160/9 160/12<br/>160/17 160/18</p> <p><b>autothrottle</b> [1] 159/24</p> <p><b>available</b> [6] 19/9 19/16<br/>48/17 52/9 174/10 258/3</p> | <p><b>Avenue</b> [3] 1/20 2/8 2/21</p> <p><b>aviation</b> [38] 8/18 8/19<br/>8/22 9/1 13/20 15/7 15/19<br/>16/22 28/13 43/10 46/25<br/>47/14 48/8 50/25 51/9<br/>51/11 51/15 52/17 54/1<br/>55/15 57/21 57/22 58/3<br/>66/22 76/12 77/8 77/10<br/>118/14 133/16 135/11 149/7<br/>194/23 200/3 224/8 224/9<br/>225/21 245/16 254/25</p> <p><b>avoid</b> [1] 43/16</p> <p><b>avoiding</b> [1] 30/18</p> <p><b>awaiting</b> [1] 236/8</p> <p><b>awarded</b> [1] 158/8</p> <p><b>aware</b> [54] 15/15 20/5<br/>32/18 41/24 42/16 75/23<br/>77/5 77/7 89/6 89/8 91/18<br/>93/20 99/2 99/6 99/22<br/>103/21 104/5 105/25<br/>117/20 118/6 118/24 119/10<br/>122/24 123/3 123/11<br/>123/14 127/12 127/16<br/>127/17 127/20 127/23<br/>128/17 130/4 137/4 137/8<br/>137/11 138/6 138/10 138/12<br/>138/17 140/5 141/6 143/2<br/>161/19 167/12 168/7 171/16<br/>194/18 208/21 209/10<br/>212/7 221/9 230/5 230/11</p> <p><b>awareness</b> [8] 42/11 69/16<br/>84/15 85/1 104/24 104/25<br/>119/18 254/4</p> <p><b>away</b> [4] 117/8 161/13<br/>170/8 256/8</p> <p><b>awry</b> [1] 172/19</p> <p><b>axes</b> [2] 22/8 22/14</p> <p><b>axis</b> [2] 22/11 22/12</p> <hr/> <p><b>B</b></p> <p><b>bachelor's</b> [1] 8/15</p> <p><b>back</b> [40] 22/13 22/16<br/>63/12 64/21 69/15 71/12</p> | <p>84/13 89/18 89/21 105/22<br/>113/10 115/24 117/15<br/>117/16 118/11 121/16 130/17<br/>144/8 145/9 154/1 157/21<br/>158/3 158/8 159/13 160/4<br/>170/12 176/3 185/9 191/6<br/>205/21 207/1 212/13<br/>214/18 217/22 218/2<br/>226/4 232/5 236/17<br/>253/15 256/8</p> <p><b>backdoor</b> [1] 211/3</p> <p><b>backdrop</b> [1] 28/12</p> <p><b>background</b> [7] 58/19<br/>77/17 86/19 90/20 144/21<br/>147/24 166/2</p> <p><b>balance</b> [1] 111/24</p> <p><b>bank</b> [6] 206/16 214/20<br/>234/20 234/21 234/24<br/>235/3</p> <p><b>Barry</b> [2] 157/2 242/14</p> <p><b>base</b> [4] 148/9 209/22<br/>232/4 235/16</p> <p><b>based</b> [35] 11/1 13/3 20/8<br/>25/18 27/12 27/22 28/7<br/>29/13 47/9 48/6 48/13<br/>48/14 54/1 56/9 56/21<br/>64/18 68/19 75/17 83/3<br/>99/7 99/21 118/1 125/2<br/>126/22 128/8 128/9 130/3<br/>147/13 151/1 177/5 182/14<br/>186/22 217/18 220/3<br/>235/14</p> <p><b>bases</b> [1] 170/19</p> <p><b>basic</b> [2] 119/4 251/12</p> <p><b>basically</b> [4] 73/4 80/11<br/>112/21 161/1</p> <p><b>basis</b> [30] 40/24 48/17<br/>52/18 65/17 149/4 150/23<br/>176/4 205/22 206/2 206/7<br/>206/14 206/19 207/1<br/>208/4 208/6 208/9 208/18<br/>208/20 209/14 209/25</p> |
|--|--|---|

|   |  |   |
|---|--|---|
| <p><b>B</b><br/> <b>basis...</b> [10] 210/8 210/15<br/> 210/20 211/12 212/14<br/> 214/25 216/10 216/23<br/> 242/11 255/10<br/> <b>BAUR</b> [1] 2/17<br/> <b>be</b> [282]<br/> <b>bear</b> [2] 132/1 174/3<br/> <b>beast</b> [1] 200/18<br/> <b>became</b> [1] 93/19<br/> <b>because</b> [96] 6/25 28/2<br/> 35/10 40/9 40/16 41/15<br/> 45/15 61/7 67/9 69/17<br/> 72/11 73/17 77/24 77/24<br/> 81/10 83/16 88/17 97/12<br/> 101/2 102/12 103/22 105/5<br/> 111/11 111/15 119/14 119/22<br/> 120/16 122/8 124/9 131/16<br/> 132/16 133/2 140/6 156/25<br/> 158/18 160/7 160/12<br/> 160/17 161/11 163/7 166/25<br/> 168/12 176/8 184/23<br/> 187/15 188/2 190/13<br/> 194/21 199/4 200/19<br/> 206/21 207/2 207/4 207/8<br/> 208/22 208/25 210/11<br/> 210/21 210/23 211/3 212/3<br/> 212/13 214/23 215/19<br/> 216/5 216/21 217/6 217/10<br/> 217/14 218/4 218/16<br/> 219/13 219/17 223/8<br/> 223/23 224/7 227/21<br/> 230/22 232/23 233/23<br/> 234/6 234/9 236/1 237/3<br/> 238/24 239/21 241/22<br/> 244/11 245/25 248/17<br/> 250/25 251/20 253/16<br/> 255/24 260/8 260/21<br/> <b>become</b> [3] 19/8 19/16<br/> 158/20<br/> <b>becomes</b> [3] 83/15 249/20<br/> 250/15</p> | <p><b>bed</b> [1] 170/12<br/> <b>been</b> [188] 9/8 9/11 12/7<br/> 12/12 13/15 13/19 15/2<br/> 16/19 16/22 18/14 20/16<br/> 20/18 22/16 25/22 25/25<br/> 26/2 26/5 28/18 28/21<br/> 28/22 32/18 33/11 35/15<br/> 38/2 39/10 39/19 42/21<br/> 51/2 51/6 53/1 53/5 57/13<br/> 59/8 64/24 65/12 65/19<br/> 67/1 72/21 73/22 73/25<br/> 74/1 74/3 74/5 74/5 75/18<br/> 75/24 76/4 77/14 77/20<br/> 77/25 77/25 82/17 83/13<br/> 83/16 85/3 85/6 85/7<br/> 85/8 85/10 85/11 85/12<br/> 86/9 88/2 88/18 90/6<br/> 92/18 92/19 95/9 96/16<br/> 96/16 96/18 98/6 99/5<br/> 99/13 101/3 101/12 101/18<br/> 101/22 101/23 102/5<br/> 103/12 104/17 104/24<br/> 105/1 105/6 106/9 108/20<br/> 109/9 110/9 112/7 115/16<br/> 115/20 120/4 120/21 121/3<br/> 122/8 123/3 124/12 126/17<br/> 126/18 127/6 128/19<br/> 129/19 134/9 135/6 135/16<br/> 138/20 138/21 138/22<br/> 146/15 146/16 146/22<br/> 152/4 152/11 152/21<br/> 152/22 152/23 152/24<br/> 153/1 154/7 155/15 157/7<br/> 157/15 157/17 158/18<br/> 158/19 161/1 163/23 167/5<br/> 168/10 168/18 168/24<br/> 173/18 174/5 178/6 178/8<br/> 180/17 184/5 184/7 184/20<br/> 186/18 187/9 187/16<br/> 190/14 190/19 193/16<br/> 194/18 198/4 201/8 201/11<br/> 201/18 201/18 202/20</p> | <p>207/23 212/16 218/8<br/> 218/15 220/9 221/8 221/21<br/> 221/25 223/8 223/14<br/> 224/15 227/20 228/19<br/> 228/22 229/13 236/16<br/> 237/8 237/18 238/11<br/> 238/12 240/18 241/15<br/> 242/19 242/22 243/1<br/> 243/1 244/5 247/12 248/2<br/> 250/25 251/25 254/24<br/> 256/3 258/18 259/10<br/> <b>before</b> [47] 1/14 6/6 14/18<br/> 23/19 23/22 24/1 26/19<br/> 31/2 65/20 84/6 114/5<br/> 120/15 123/7 138/7 139/2<br/> 148/4 149/25 156/14<br/> 156/17 157/25 158/12<br/> 158/14 170/25 185/11<br/> 191/23 192/10 203/7<br/> 211/14 212/12 213/19<br/> 213/19 218/14 222/5<br/> 222/5 222/7 223/10<br/> 223/16 223/24 224/2<br/> 224/10 226/8 229/12<br/> 230/8 234/7 240/8 241/6<br/> 241/15<br/> <b>begin</b> [4] 6/7 56/10 69/19<br/> 197/8<br/> <b>beginning</b> [6] 50/13 137/2<br/> 172/18 178/16 207/5<br/> 248/12<br/> <b>begins</b> [1] 159/22<br/> <b>begun</b> [2] 129/1 173/21<br/> <b>behalf</b> [8] 10/4 10/8 37/17<br/> 57/6 86/13 86/20 144/14<br/> 175/4<br/> <b>behaves</b> [1] 23/1<br/> <b>behaving</b> [3] 78/9 96/1<br/> 133/14<br/> <b>behavior</b> [1] 106/1<br/> <b>behind</b> [1] 234/22<br/> <b>being</b> [56] 6/3 9/18 9/22</p> |
|---|--|---|

|   |  |   |
|---|--|---|
| <p><b>B</b><br/> <b>being...</b> [53] 9/24 23/12<br/> 26/8 46/12 47/25 52/6<br/> 54/2 57/1 58/20 66/16<br/> 88/20 91/3 91/4 101/13<br/> 110/18 110/20 111/24 116/7<br/> 116/11 117/6 117/9 119/4<br/> 127/7 130/23 143/21 151/11<br/> 151/16 155/16 160/1 161/15<br/> 163/4 163/19 166/4 169/17<br/> 178/17 179/11 182/19 188/2<br/> 188/2 191/7 195/5 198/16<br/> 225/20 231/6 235/14<br/> 237/10 237/18 253/6<br/> 254/9 257/11 259/14<br/> 259/15 261/10<br/> <b>belief</b> [1] 171/3<br/> <b>believe</b> [62] 7/17 17/12<br/> 21/7 29/9 30/21 36/2<br/> 41/14 45/15 50/6 58/4<br/> 58/10 58/12 59/23 63/24<br/> 68/3 76/5 81/25 85/6<br/> 87/8 94/21 94/22 96/5<br/> 96/9 96/23 97/12 104/5<br/> 108/17 109/13 110/15 111/2<br/> 115/6 129/20 133/2 135/21<br/> 144/25 146/3 147/10<br/> 147/13 150/4 152/2 153/4<br/> 154/15 155/5 156/16 165/5<br/> 166/7 168/13 171/14 172/2<br/> 176/3 181/6 186/9 186/24<br/> 187/14 188/23 195/18<br/> 195/18 197/2 197/8<br/> 230/20 232/18 259/2<br/> <b>believed</b> [3] 124/17 208/23<br/> 215/2<br/> <b>below</b> [2] 113/6 187/22<br/> <b>Ben</b> [2] 144/13 144/19<br/> <b>benchmark</b> [1] 149/7<br/> <b>benchmarks</b> [1] 151/10<br/> <b>benefit</b> [2] 191/15 250/12<br/> <b>benign</b> [2] 26/5 177/2</p> | <p><b>BENJAMIN</b> [1] 2/16<br/> <b>Bennett</b> [1] 3/23<br/> <b>best</b> [25] 22/6 22/15<br/> 22/21 23/4 28/24 78/9<br/> 86/7 104/21 149/9 158/15<br/> 164/22 175/18 194/19<br/> 232/14 232/14 232/16<br/> 232/17 238/17 238/18<br/> 238/20 238/24 240/16<br/> 259/19 262/7 262/11<br/> <b>better</b> [5] 10/3 86/12<br/> 163/18 172/16 199/21<br/> <b>between</b> [32] 53/15 64/19<br/> 64/25 71/8 78/17 79/25<br/> 82/5 90/4 100/23 101/5<br/> 101/8 106/20 108/11 112/10<br/> 113/18 114/11 125/13<br/> 132/10 132/24 135/2<br/> 135/17 139/15 155/6<br/> 167/24 173/20 188/25<br/> 204/16 225/7 227/2<br/> 231/17 231/18 247/6<br/> <b>beyond</b> [11] 57/2 63/18<br/> 117/1 121/21 123/16 123/23<br/> 123/23 153/16 208/23<br/> 218/17 256/19<br/> <b>bias</b> [4] 78/6 139/7 139/17<br/> 222/16<br/> <b>bickering</b> [1] 200/22<br/> <b>big</b> [1] 100/22<br/> <b>bigger</b> [1] 178/19<br/> <b>billing</b> [1] 86/2<br/> <b>bit</b> [12] 9/24 10/15 27/5<br/> 48/16 72/20 87/10 88/24<br/> 135/1 203/24 203/25<br/> 209/9 250/24<br/> <b>bits</b> [1] 197/13<br/> <b>black</b> [4] 66/12 66/16<br/> 66/19 259/24<br/> <b>blame</b> [1] 258/12<br/> <b>blogs</b> [1] 52/12<br/> <b>blown</b> [1] 257/11</p> | <p><b>board</b> [5] 85/2 85/13<br/> 87/24 133/13 140/23<br/> <b>body</b> [1] 219/20<br/> <b>BOEING</b> [227] 1/9 2/16<br/> 11/5 11/10 11/15 12/8 16/5<br/> 19/20 25/5 25/19 28/18<br/> 28/22 30/20 31/5 36/10<br/> 36/10 37/17 38/3 38/10<br/> 41/15 41/24 42/12 43/19<br/> 44/24 44/24 44/25 45/13<br/> 45/13 45/16 45/17 46/7<br/> 47/17 47/19 53/15 53/21<br/> 54/2 54/9 54/12 54/21<br/> 55/5 55/8 55/21 56/4<br/> 56/18 57/6 57/16 58/20<br/> 60/21 61/5 62/14 63/14<br/> 63/25 64/7 64/12 75/12<br/> 75/14 79/19 80/25 82/11<br/> 86/10 86/11 86/13 86/14<br/> 86/16 86/17 90/25 90/25<br/> 91/7 91/7 91/12 91/12<br/> 91/13 93/12 93/12 94/3<br/> 94/4 95/12 95/12 96/12<br/> 96/20 99/2 99/22 103/13<br/> 103/20 104/5 104/10<br/> 104/16 104/18 104/22<br/> 105/11 105/12 106/2 106/21<br/> 106/22 106/23 107/6<br/> 107/8 108/1 108/15 109/11<br/> 109/14 112/10 112/23 113/6<br/> 113/19 117/20 117/25 118/5<br/> 118/6 118/13 118/15 118/19<br/> 118/24 119/9 119/19 119/20<br/> 119/21 120/7 120/20 121/6<br/> 121/13 124/10 124/14<br/> 124/22 124/25 125/3<br/> 126/22 127/8 128/14<br/> 129/17 130/8 130/25 131/11<br/> 133/24 134/8 134/23<br/> 135/20 143/2 143/17 144/1<br/> 144/14 144/19 145/2<br/> 145/14 145/15 145/16</p> |
|---|--|---|



|                                 |                                  |                                   |
|---------------------------------|----------------------------------|-----------------------------------|
| <b>B</b>                        | 26/15 36/10 42/6 47/10           | <b>briefing [2]</b> 202/7 242/23  |
| <b>BOEING...</b> [81] 145/24    | 56/12 73/5 79/18 80/12           | <b>briefly [11]</b> 97/14 12/21   |
| 146/9 146/12 146/14             | 81/1 84/5 84/24 85/11            | 13/11 13/24 17/10 23/24           |
| 146/22 147/3 154/2 155/1        | 93/19 97/19 100/15 100/16        | 27/25 31/21 44/21 45/5            |
| 155/20 161/1 161/4 162/1        | 100/17 100/25 103/9 104/4        | 189/24                            |
| 164/12 164/14 164/16            | 104/12 109/13 118/3 118/15       | <b>briefs [2]</b> 217/14 245/10   |
| 167/16 170/5 170/18             | 120/2 120/4 133/16 145/15        | <b>bring [3]</b> 151/17 224/16    |
| 170/22 174/7 177/19 178/3       | 149/9 151/15 157/20              | 245/17                            |
| 179/13 179/19 179/25            | 157/25 188/23 193/20             | <b>broad [7]</b> 13/18 26/25      |
| 180/2 181/8 185/11 185/15       | 198/19 199/13 199/23             | 68/1 98/16 102/19 136/13          |
| 190/9 190/16 194/25 195/3       | 200/12 204/20 204/25             | 184/17                            |
| 200/7 200/23 201/5              | 212/1 212/1 212/22 213/8         | <b>broken [1]</b> 222/4           |
| 202/17 203/7 207/6 208/2        | 218/18 221/20 236/6              | <b>brother [1]</b> 5/19           |
| 208/3 209/1 209/9 209/10        | 236/15 236/18 237/7              | <b>brought [1]</b> 194/4          |
| 210/12 210/15 210/18 211/6      | 237/20 240/19 240/22             | <b>building [1]</b> 14/14         |
| 212/7 215/5 220/16              | 240/25 241/2 243/16              | <b>bullet [8]</b> 43/5 60/22 61/1 |
| 220/21 221/4 224/18             | 243/20 244/15 245/21             | 61/3 103/20 117/19 198/1          |
| 225/25 226/3 226/9              | 246/24 247/25 250/14             | 198/12                            |
| 229/2 230/11 231/5              | 250/20 251/21 256/17             | <b>bulletin [8]</b> 128/14 161/24 |
| 231/23 233/16 241/13            | 258/21 258/25                    | 162/1 162/4 162/5 163/24          |
| 244/8 246/5 247/7 249/8         | <b>bottom [8]</b> 54/20 60/25    | 164/2 164/13                      |
| 249/17 249/23 253/13            | 109/10 124/13 131/24 137/1       | <b>bulletins [1]</b> 49/16        |
| 256/13 257/7 258/4              | 255/8 259/22                     | <b>bullets [1]</b> 100/12         |
| 258/12 258/16 258/17            | <b>box [1]</b> 33/2              | <b>burden [3]</b> 197/15 251/10   |
| 258/23 259/1 259/5              | <b>boxes [5]</b> 66/12 66/16     | 257/2                             |
| 259/18 260/25                   | 66/17 66/20 259/24               | <b>burdens [1]</b> 256/25         |
| <b>Boeing 737 [1]</b> 11/10     | <b>BP [2]</b> 205/15 218/2       | <b>BURNS [1]</b> 2/13             |
| <b>Boeing's [35]</b> 27/12 28/2 | <b>BP Products [1]</b> 205/15    | <b>business [4]</b> 170/10 182/16 |
| 29/14 41/21 41/22 43/15         | <b>bracketed [2]</b> 45/14 56/24 | 250/4 262/20                      |
| 54/14 56/14 57/7 76/8           | <b>brake [2]</b> 10/7 167/22     | <b>but [237]</b> 8/10 11/14 11/17 |
| 78/20 79/10 82/19 83/4          | <b>BRAMMEIER [1]</b> 2/10        | 11/20 12/21 14/21 17/16           |
| 84/1 100/20 104/25 120/11       | <b>brand [1]</b> 9/19            | 18/15 22/16 26/10 26/21           |
| 143/9 143/20 143/22             | <b>brand-new [1]</b> 9/19        | 26/24 30/9 30/23 31/15            |
| 146/2 161/24 164/2 179/8        | <b>BRANDON [1]</b> 2/16          | 32/2 35/12 35/21 36/8             |
| 189/16 198/3 199/20             | <b>Brazilian [1]</b> 55/14       | 37/6 37/16 40/15 41/4             |
| 200/19 201/20 248/16            | <b>break [9]</b> 70/6 78/22      | 44/19 46/1 46/13 46/24            |
| 249/4 255/10 260/8 261/3        | 78/23 81/20 144/8 191/6          | 47/22 49/11 50/3 51/15            |
| <b>Boetsch [1]</b> 245/15       | 191/23 243/17 253/3              | 51/23 56/24 58/12 58/16           |
| <b>boiling [1]</b> 152/25       | <b>breaking [1]</b> 228/9        | 60/3 61/23 66/1 66/6 68/1         |
| <b>book [1]</b> 163/8           | <b>brief [5]</b> 202/8 217/13    | 68/22 69/16 71/7 72/3             |
| <b>borne [1]</b> 30/22          | 251/5 253/24 253/25              | 72/10 73/4 76/10 77/22            |
| <b>both [69]</b> 5/22 22/23     | <b>briefed [2]</b> 111/24 251/4  | 79/20 80/14 81/16 82/9            |

|   |   |   |
|---|---|---|
| <p><b>B</b><br/> but... [185] 82/17 83/8<br/> 83/17 86/6 86/20 87/2<br/> 88/19 88/24 89/18 93/3<br/> 93/8 97/3 98/10 99/15<br/> 102/3 102/11 102/21<br/> 105/25 106/9 108/9 109/21<br/> 111/23 112/1 114/14 115/7<br/> 115/13 116/13 116/18 117/10<br/> 118/9 120/5 120/17 122/19<br/> 122/23 124/15 125/18<br/> 125/22 127/6 127/8<br/> 127/23 128/2 130/7 130/14<br/> 130/24 131/4 136/15<br/> 142/10 142/17 142/20<br/> 143/20 145/24 146/12<br/> 146/16 148/14 149/14 151/5<br/> 154/1 155/1 155/11 159/15<br/> 161/10 161/18 161/24 162/8<br/> 162/10 164/6 164/11<br/> 164/23 166/6 166/10<br/> 166/13 168/8 168/13<br/> 168/14 169/15 169/19<br/> 170/7 170/15 171/7 172/1<br/> 172/17 173/13 174/25<br/> 175/4 175/7 175/24 176/11<br/> 176/17 178/19 180/13<br/> 183/24 184/7 184/22<br/> 189/5 191/7 192/24 197/19<br/> 198/16 200/23 201/25<br/> 202/1 202/3 203/17<br/> 203/25 204/15 204/21<br/> 204/23 206/7 207/7<br/> 207/20 208/16 209/7<br/> 209/13 210/10 210/20<br/> 211/2 211/10 212/17 212/23<br/> 213/1 213/18 213/23 214/6<br/> 214/15 214/23 214/24<br/> 215/14 217/5 217/16<br/> 218/17 218/23 219/4<br/> 219/21 219/22 222/8<br/> 223/18 223/20 223/22</p> | <p>226/11 229/16 229/24<br/> 230/16 232/20 232/21<br/> 235/2 235/4 235/15<br/> 235/18 235/22 235/25<br/> 236/21 237/14 237/15<br/> 237/16 238/2 238/19<br/> 239/19 242/6 242/7<br/> 242/11 243/25 245/2<br/> 245/25 247/22 249/2<br/> 249/11 250/14 251/3 251/6<br/> 251/9 251/10 252/7 252/11<br/> 253/18 254/20 255/8<br/> 255/17 255/24 256/5<br/> 257/4 257/12 257/18<br/> 260/6 260/11 260/22<br/> but-for [23] 76/10 82/17<br/> 87/2 122/19 183/24<br/> 201/25 202/1 203/25<br/> 214/24 223/18 232/21<br/> 237/14 237/15 237/16<br/> 238/19 242/7 249/2 251/3<br/> 251/9 251/10 252/7 252/11<br/> 253/18<br/> button [3] 72/23 142/14<br/> 142/15<br/> buy [2] 26/16 246/20<br/> buyer [1] 26/22<br/> bypassed [2] 101/18 101/22</p> <hr/> <p><b>C</b><br/> CAAC [2] 58/7 58/9<br/> cabin [1] 208/25<br/> cacophony [7] 68/14 68/18<br/> 70/5 73/18 80/6 80/7<br/> 119/4<br/> cake [1] 44/12<br/> calibration [1] 189/15<br/> call [15] 5/8 7/1 14/11<br/> 57/25 68/8 69/9 70/21<br/> 81/3 81/8 93/8 99/21<br/> 101/18 118/1 159/5 159/9<br/> called [16] 10/13 13/10<br/> 14/22 20/23 50/3 68/11</p> | <p>77/5 127/2 128/5 149/24<br/> 159/8 167/1 167/12 185/14<br/> 189/13 231/10<br/> calling [2] 81/23 82/1<br/> calls [2] 152/23 183/13<br/> came [9] 120/21 122/25<br/> 131/5 154/25 161/23<br/> 214/18 232/23 234/12<br/> 258/20<br/> campaign [1] 106/5<br/> can [68] 11/16 11/17 12/1<br/> 12/11 13/16 21/17 23/5<br/> 25/12 26/1 26/17 26/21<br/> 56/23 56/24 62/10 63/21<br/> 67/21 69/6 70/6 72/21<br/> 72/24 89/25 92/23 92/24<br/> 94/21 105/19 111/24 116/16<br/> 120/20 123/2 133/6 133/7<br/> 133/7 136/23 141/17<br/> 158/15 161/14 162/15 164/5<br/> 172/15 176/23 181/14<br/> 181/17 193/11 196/20<br/> 197/23 201/7 207/15<br/> 209/13 209/24 209/25<br/> 211/18 223/3 232/11 234/2<br/> 234/18 235/2 235/16<br/> 235/21 235/21 246/19<br/> 247/21 250/1 250/13<br/> 251/11 252/13 257/25<br/> 258/2 261/9<br/> can't [24] 68/21 86/19<br/> 120/16 125/6 125/16 126/11<br/> 129/10 132/7 133/7 133/8<br/> 162/17 171/6 173/3 218/20<br/> 225/24 226/2 226/13<br/> 228/8 228/8 228/11 235/6<br/> 235/22 235/25 241/4<br/> Canada [3] 51/14 54/16<br/> 56/7<br/> Canal [1] 2/18<br/> CANIC [3] 4/10 4/11 4/12<br/> cannot [5] 170/11 220/19</p> |
|---|---|---|

|  |   |  |
|--|---|--|
| <p><b>C</b><br/> <b>cannot...</b> [3] 232/22<br/> 234/5 257/16<br/> <b>capabilities</b> [2] 76/9 87/14<br/> <b>capable</b> [4] 26/8 40/13<br/> 75/5 118/7<br/> <b>capacities</b> [1] 10/4<br/> <b>capacity</b> [6] 13/17 30/8<br/> 105/24 126/20 174/24<br/> 174/25<br/> <b>captain</b> [89] 4/16 5/8 7/1<br/> 7/8 7/22 8/3 11/1 12/7<br/> 12/24 13/6 14/4 14/22<br/> 20/9 37/18 37/20 38/4<br/> 73/10 85/15 85/19 85/21<br/> 86/22 90/9 98/22 99/20<br/> 100/1 105/10 109/2 110/8<br/> 112/5 114/12 116/21 117/15<br/> 118/22 120/19 121/4 121/16<br/> 124/7 127/12 128/1 128/5<br/> 129/24 133/1 133/23 134/7<br/> 135/17 136/18 136/24<br/> 140/11 140/13 140/24<br/> 142/24 144/4 144/17<br/> 144/23 145/22 147/5<br/> 148/3 157/12 158/8 162/21<br/> 163/15 164/24 168/24<br/> 183/11 184/5 185/9 185/19<br/> 192/7 193/1 193/16 198/9<br/> 198/15 199/12 199/22<br/> 201/14 238/4 239/6<br/> 239/14 242/3 242/8<br/> 243/24 247/18 248/5<br/> 248/9 248/15 249/18<br/> 250/17 256/16 258/3<br/> <b>captain's</b> [1] 14/21<br/> <b>captaining</b> [1] 12/18<br/> <b>captains</b> [2] 11/11 12/20<br/> <b>car</b> [1] 26/16<br/> <b>car's</b> [1] 130/22<br/> <b>cards</b> [3] 114/17 114/22<br/> 115/8</p> | <p><b>care</b> [1] 82/13<br/> <b>career</b> [3] 47/5 115/15<br/> 194/20<br/> <b>careful</b> [1] 182/19<br/> <b>carefully</b> [4] 37/15 203/3<br/> 248/4 258/20<br/> <b>Carolyn</b> [1] 5/16<br/> <b>carried</b> [2] 199/8 247/13<br/> <b>carrier</b> [6] 46/22 46/23<br/> 48/12 56/25 57/2 182/4<br/> <b>carriers</b> [19] 16/11 46/20<br/> 47/1 47/6 47/12 47/15<br/> 48/21 49/21 49/25 50/3<br/> 50/4 50/7 50/17 50/21<br/> 50/24 52/7 52/18 56/19<br/> 199/9<br/> <b>carry</b> [1] 14/25<br/> <b>carrying</b> [4] 26/10 88/21<br/> 135/13 254/11<br/> <b>case</b> [92] 1/6 7/12 18/3<br/> 18/25 19/14 20/23 21/24<br/> 23/3 27/7 28/15 36/15<br/> 40/15 40/21 44/6 47/18<br/> 48/2 51/19 53/16 68/3<br/> 70/13 85/22 85/24 86/5<br/> 90/10 90/17 104/7 107/20<br/> 109/18 109/19 109/23<br/> 109/24 110/13 110/20<br/> 110/21 112/24 121/24 122/1<br/> 122/2 145/1 145/19 145/22<br/> 146/23 148/21 152/10<br/> 153/11 155/25 161/5 176/21<br/> 180/7 185/15 190/24 201/8<br/> 203/2 203/5 204/7 204/8<br/> 205/3 205/5 205/15<br/> 205/20 205/23 206/8<br/> 206/9 208/24 209/2<br/> 210/20 215/22 218/3<br/> 218/5 218/9 219/4 221/17<br/> 226/8 237/13 243/23<br/> 244/2 244/6 245/5 245/15<br/> 246/24 247/25 250/3</p> | <p>250/10 251/4 251/11 252/2<br/> 252/2 256/19 256/20<br/> 257/1 257/12 259/19<br/> <b>cases</b> [8] 15/7 145/13<br/> 145/15 147/1 147/3 211/16<br/> 218/3 242/22<br/> <b>CASELL</b> [14] 2/3 37/15<br/> 38/17 45/10 147/10 148/17<br/> 149/15 150/16 154/12<br/> 156/2 181/2 196/19 239/22<br/> 242/20<br/> <b>Cassell</b>.....<br/> .....<b>197</b> [1] 3/10<br/> <b>Cassell</b>.....<br/> .....<b>243</b> [1] 3/14<br/> <b>Cassell</b>.....<b>07</b><br/> <b>[1]</b> 3/5<br/> <b>Cassell</b>.....<b>185</b> [1]<br/> 3/8<br/> <b>catastrophic</b> [14] 30/25<br/> 46/10 46/12 46/18 76/14<br/> 108/20 126/20 126/25<br/> 127/6 133/12 175/21 177/3<br/> 195/9 254/13<br/> <b>categories</b> [2] 175/19<br/> 176/22<br/> <b>categorize</b> [2] 12/14<br/> 136/14<br/> <b>category</b> [2] 126/24 177/6<br/> <b>causal</b> [10] 87/15 138/3<br/> 204/15 210/3 215/3 222/3<br/> 224/7 225/22 237/3<br/> 253/12<br/> <b>causation</b> [24] 82/17<br/> 183/12 183/25 197/23<br/> 202/1 205/6 214/24<br/> 214/24 220/10 234/19<br/> 236/15 239/18 240/18<br/> 242/18 242/20 247/6<br/> 247/11 248/1 248/18<br/> 249/2 251/3 251/9 252/7<br/> 253/18</p> |
|--|---|--|

|  |   |   |
|--|---|---|
| <p><b>C</b><br/> <b>cause [32]</b> 76/10 87/2<br/> 118/25 122/19 204/11<br/> 204/16 204/16 204/22<br/> 204/23 205/9 205/9<br/> 205/17 205/18 210/2<br/> 211/18 211/19 211/22<br/> 223/18 226/15 227/2<br/> 229/8 230/5 231/3 232/21<br/> 232/22 232/24 251/14<br/> 252/18 253/3 256/24<br/> 257/4 257/5<br/> <b>caused [7]</b> 160/8 163/4<br/> 167/2 212/20 218/1<br/> 220/22 240/14<br/> <b>causes [6]</b> 202/5 204/18<br/> 204/20 229/7 237/21<br/> 251/10<br/> <b>causing [1]</b> 117/21<br/> <b>caution [1]</b> 73/9<br/> <b>caveat [1]</b> 168/3<br/> <b>CBT [2]</b> 56/8 56/21<br/> <b>center [1]</b> 116/18<br/> <b>certain [7]</b> 10/4 12/4 13/4<br/> 49/24 51/19 164/7 169/14<br/> <b>certainly [30]</b> 10/17 21/17<br/> 74/18 77/16 77/21 84/11<br/> 84/18 85/10 92/11 95/18<br/> 129/21 130/25 141/17<br/> 153/8 171/9 181/17 187/11<br/> 192/24 193/19 194/14<br/> 201/8 203/20 204/14<br/> 220/20 222/21 233/16<br/> 235/14 239/19 256/21<br/> 258/5<br/> <b>certainty [6]</b> 16/14 16/25<br/> 65/8 147/14 252/11 252/13<br/> <b>CERTIFICATE [1]</b> 262/2<br/> <b>Certificate.....</b><br/> .....<b>262 [1]</b> 3/15<br/> <b>certification [28]</b> 9/12<br/> 9/19 9/19 10/10 18/13</p> | <p>20/11 22/1 22/5 23/6<br/> 48/13 87/15 99/4 99/6<br/> 99/12 104/11 108/18 114/18<br/> 115/8 158/20 171/12 177/9<br/> 178/4 178/5 179/15 179/20<br/> 180/4 195/20 230/9<br/> <b>certified [12]</b> 23/4 30/16<br/> 47/23 48/9 74/4 88/19<br/> 99/7 147/25 157/17 159/2<br/> 174/6 236/17<br/> <b>certify [3]</b> 26/19 262/4<br/> 262/12<br/> <b>cetera [1]</b> 54/17<br/> <b>chain [22]</b> 136/12 197/23<br/> 201/9 203/15 212/23<br/> 213/13 213/22 220/14<br/> 224/7 225/22 242/5<br/> 247/6 247/11 247/19<br/> 248/1 248/13 248/18<br/> 250/22 250/25 253/3<br/> 257/2 257/4<br/> <b>challenge [4]</b> 215/18 248/5<br/> 248/16 249/22<br/> <b>chance [6]</b> 18/17 79/5<br/> 165/25 168/20 201/18<br/> 201/21<br/> <b>chances [1]</b> 252/25<br/> <b>change [16]</b> 26/20 26/23<br/> 26/24 28/16 41/22 101/8<br/> 119/18 178/23 179/2 180/2<br/> 180/9 190/11 234/24<br/> 238/12 255/12 258/18<br/> <b>changed [2]</b> 28/17 243/1<br/> <b>changes [6]</b> 26/4 186/13<br/> 190/4 190/6 212/14 241/10<br/> <b>changing [3]</b> 235/5 258/17<br/> 258/23<br/> <b>Chapter [2]</b> 258/11 260/12<br/> <b>character [2]</b> 253/1 253/4<br/> <b>characteristics [2]</b> 169/4<br/> 169/24<br/> <b>characterizations [1]</b></p> | <p>214/12<br/> <b>characterize [3]</b> 135/3<br/> 136/17 176/15<br/> <b>characterizes [1]</b> 218/12<br/> <b>CHAREST [1]</b> 2/13<br/> <b>charge [3]</b> 12/19 40/14<br/> 249/14<br/> <b>charged [4]</b> 207/5 238/3<br/> 258/18 258/19<br/> <b>CHASE [1]</b> 2/12<br/> <b>chat [33]</b> 40/11 51/20<br/> 91/23 94/23 95/21 95/21<br/> 95/24 97/6 97/8 109/4<br/> 110/8 112/6 112/9 113/1<br/> 113/10 113/15 113/17 113/18<br/> 113/23 114/5 120/14 120/21<br/> 121/19 122/13 123/8 129/18<br/> 129/20 130/1 130/6 131/10<br/> 131/10 131/16 132/9<br/> <b>check [8]</b> 14/16 14/22<br/> 17/12 111/14 112/1 189/10<br/> 189/14 193/12<br/> <b>checklist [2]</b> 128/9 159/8<br/> <b>Chicago [1]</b> 2/11<br/> <b>chief [6]</b> 55/22 56/4<br/> 56/14 57/8 105/24 119/24<br/> <b>children [1]</b> 5/16<br/> <b>China [2]</b> 56/7 58/12<br/> <b>Chinese [2]</b> 54/16 58/10<br/> <b>choice [2]</b> 30/18 30/23<br/> <b>chord [1]</b> 24/16<br/> <b>Chris [8]</b> 5/18 6/24 199/12<br/> 199/19 201/15 247/9<br/> 249/19 250/17<br/> <b>Christopher [7]</b> 42/17<br/> 43/25 65/2 198/19 244/12<br/> 248/18 256/16<br/> <b>chronology [1]</b> 108/7<br/> <b>Circuit [10]</b> 202/9 205/8<br/> 205/24 251/9 251/12<br/> 251/24 252/6 252/9<br/> 253/20 254/2</p> |
|--|---|---|



|   |  |   |
|---|--|---|
| <b>C</b>  | <b>climb [8]</b> 22/20 69/9<br>77/15 78/7 78/7 84/17<br>139/22 140/3   | <b>comfortable [1]</b> 220/6<br><b>coming [8]</b> 39/24 37/17<br>52/3 72/16 130/17 198/19<br>212/13 235/8     |
| <b>Circuit's [2]</b> 205/3 205/5  | <b>climb-out [3]</b> 77/15 78/7<br>84/17   | <b>command [2]</b> 69/12 190/8  |
| <b>circumstances [5]</b> 25/2<br>71/1 141/3 206/20 253/10   | <b>climbing [4]</b> 69/10 139/14<br>139/15 139/19  | <b>commanded [1]</b> 74/15  |
| <b>citations [1]</b> 214/10   | <b>clock [2]</b> 243/15 243/15   | <b>commanding [1]</b> 118/7   |
| <b>cite [1]</b> 207/2   | <b>close [6]</b> 83/10 83/17<br>132/6 173/11 183/10 191/7  | <b>commands [3]</b> 84/20 169/3<br>169/23   |
| <b>cited [9]</b> 202/10 204/7<br>206/3 206/3 215/16 218/3<br>220/1 220/2 246/24   | <b>closed [1]</b> 147/7  | <b>comment [1]</b> 240/20   |
| <b>cites [1]</b> 250/5  | <b>closely [1]</b> 148/4   | <b>comments [1]</b> 233/19  |
| <b>citizen [1]</b> 28/22  | <b>closer [1]</b> 71/20  | <b>commercial [9]</b> 23/8 46/14<br>46/25 67/1 68/24 136/11<br>140/2 222/20 254/12                            |
| <b>City [1]</b> 2/5   | <b>closest [1]</b> 173/7   | <b>Commission [1]</b> 146/1   |
| <b>civil [7]</b> 48/8 50/25 51/9<br>52/16 205/18 218/4<br>254/25  | <b>closing [7]</b> 3/9 4/19 39/12<br>39/23 40/2 155/25 156/18  | <b>commit [2]</b> 249/8 258/23  |
| <b>clacker [1]</b> 71/5   | <b>closing for [1]</b> 155/25  | <b>committed [4]</b> 28/19 195/3<br>198/4 247/6   |
| <b>claim [3]</b> 211/3 237/2<br>260/2   | <b>coast [1]</b> 216/2   | <b>committee [9]</b> 4/7 18/12<br>61/4 61/24 100/18 147/23<br>165/9 214/14 260/12                             |
| <b>claiming [2]</b> 36/6 240/2  | <b>cockpit [12]</b> 66/17 69/7<br>72/15 119/1 141/8 141/16<br>162/6 192/19 192/24<br>193/15 193/18 223/1   | <b>common [3]</b> 47/8 136/14<br>194/16   |
| <b>clarification [2]</b> 45/25<br>185/8   | <b>collaborate [1]</b> 177/8   | <b>commonly [2]</b> 21/10 22/11   |
| <b>clarify [5]</b> 147/1 155/5<br>161/25 191/21 192/1   | <b>collaboration [1]</b> 152/23  | <b>communicate [3]</b> 107/4<br>107/6 107/9   |
| <b>Clariss [1]</b> 5/18   | <b>colleague [5]</b> 61/5 203/25<br>210/5 213/1 220/9  | <b>communicated [2]</b> 155/1<br>155/7  |
| <b>class [1]</b> 84/18  | <b>colleagues [4]</b> 40/3 115/19<br>115/22 116/6  | <b>communicates [1]</b> 237/24  |
| <b>cleanup [1]</b> 159/9  | <b>collected [2]</b> 215/19 217/7  | <b>communicating [1]</b> 178/1  |
| <b>clear [22]</b> 16/4 16/21<br>46/21 53/9 54/5 56/21<br>58/2 58/9 78/3 87/22<br>92/17 103/12 104/14<br>124/16 160/24 161/7<br>162/25 181/22 197/9<br>207/22 227/5 235/18 | <b>college [2]</b> 2/3 9/17  | <b>communication [3]</b> 155/10<br>155/20 187/6   |
| <b>clearer [1]</b> 167/5  | <b>column [6]</b> 68/8 68/10<br>69/15 71/6 159/23 160/1  | <b>community [12]</b> 76/12<br>104/8 118/14 133/16<br>188/20 189/7 190/1 194/23<br>224/8 224/9 232/5 258/6    |
| <b>clearly [4]</b> 95/1 132/7<br>250/23 253/18  | <b>combination [1]</b> 77/19   | <b>commuting [1]</b> 193/11   |
| <b>clears [1]</b> 90/7  | <b>come [22]</b> 25/5 46/9 86/6<br>105/22 120/14 158/3<br>173/12 190/5 191/6 193/17<br>206/15 207/1 212/18 214/1<br>218/2 219/21 234/22<br>245/11 249/14 250/11<br>251/15 257/19 | <b>compadres [1]</b> 183/3  |
| <b>clerk [2]</b> 111/1 112/1  | <b>comes [4]</b> 165/12 205/21<br>217/22 256/6   | <b>company [33]</b> 1/9 2/16<br>12/3 14/16 28/23 47/21<br>86/1 86/10 86/11 86/13<br>86/15 104/17 105/2 105/11 |
| <b>clerk's [1]</b> 111/11   |  |   |
| <b>clients [3]</b> 198/17 244/12<br>245/2   |  |   |
| <b>CLIFFORD [1]</b> 2/10  |  |   |

|  |  |  |
|--|--|--|
| <p><b>C</b><br/> <b>company...</b> [19] 105/12<br/> 106/21 106/22 107/15<br/> 109/11 112/11 121/13 131/1<br/> 139/6 143/2 144/20 145/2<br/> 175/4 182/14 182/17 200/7<br/> 233/16 250/4 260/25<br/> <b>company's</b> [2] 10/19 61/25<br/> <b>comparison</b> [1] 73/5<br/> <b>competitor's</b> [1] 183/3<br/> <b>competitors</b> [2] 182/23<br/> 183/1<br/> <b>complete</b> [12] 16/6 19/20<br/> 30/22 31/22 96/6 112/14<br/> 126/19 138/1 140/20 168/1<br/> 190/1 221/4<br/> <b>completed</b> [1] 190/20<br/> <b>completely</b> [13] 26/5 36/7<br/> 46/3 73/19 78/5 96/18<br/> 104/5 105/4 109/21 133/2<br/> 133/15 135/5 260/6<br/> <b>completeness</b> [2] 109/20<br/> 122/11<br/> <b>complex</b> [2] 136/10 220/14<br/> <b>complexity</b> [1] 220/18<br/> <b>compliance</b> [1] 158/24<br/> <b>complicated</b> [7] 71/19 73/3<br/> 116/14 140/22 216/4 216/9<br/> 219/18<br/> <b>complied</b> [1] 75/15<br/> <b>comply</b> [1] 262/13<br/> <b>component</b> [6] 26/3 46/2<br/> 127/5 175/18 186/4 254/7<br/> <b>components</b> [1] 87/25<br/> <b>comport</b> [1] 70/16<br/> <b>comprehensive</b> [2] 16/16<br/> 65/10<br/> <b>computer</b> [3] 56/9 56/21<br/> 222/18<br/> <b>computer-based</b> [2] 56/9<br/> 56/21<br/> <b>conceal</b> [2] 41/25 64/4</p> | <p><b>concealed</b> [1] 200/19<br/> <b>concealing</b> [3] 28/20 44/23<br/> 64/1<br/> <b>concept</b> [6] 11/12 120/4<br/> 166/2 215/10 216/1 218/23<br/> <b>concepts</b> [1] 204/13<br/> <b>concern</b> [1] 36/4<br/> <b>concerning</b> [1] 61/25<br/> <b>concerns</b> [1] 48/25<br/> <b>concert</b> [2] 51/7 61/16<br/> <b>concession</b> [2] 206/4<br/> 246/4<br/> <b>conclude</b> [1] 226/6<br/> <b>concluded</b> [4] 76/25<br/> 110/25 143/4 261/13<br/> <b>conclusion</b> [24] 43/3 43/10<br/> 43/13 43/17 43/20 43/23<br/> 44/1 44/1 44/8 44/9<br/> 183/14 184/2 194/4 194/15<br/> 197/22 198/13 198/20<br/> 198/21 199/11 201/14<br/> 201/15 253/11 254/22<br/> 258/14<br/> <b>conclusions</b> [3] 19/10 148/5<br/> 248/1<br/> <b>condition</b> [3] 68/12 70/4<br/> 163/4<br/> <b>conditions</b> [3] 101/23 129/1<br/> 162/13<br/> <b>conduct</b> [18] 40/13 90/24<br/> 125/10 129/15 207/5<br/> 209/5 211/4 215/1 220/16<br/> 220/21 226/14 234/14<br/> 234/15 237/15 252/14<br/> 252/24 253/2 253/22<br/> <b>conducted</b> [4] 143/2<br/> 189/12 228/20 245/13<br/> <b>conducting</b> [1] 259/23<br/> <b>confer</b> [2] 81/25 203/1<br/> <b>Conference</b> [1] 262/14<br/> <b>conferences</b> [2] 48/21<br/> 48/23</p> | <p><b>confidential</b> [5] 109/11<br/> 109/15 109/17 109/22<br/> 109/24<br/> <b>confirm</b> [1] 208/6<br/> <b>conflicting</b> [1] 199/18<br/> <b>confusing</b> [4] 70/25<br/> 162/24 166/25 258/6<br/> <b>confusion</b> [1] 251/1<br/> <b>congressional</b> [5] 214/7<br/> 214/10 214/11 217/3 218/11<br/> <b>congruent</b> [1] 143/24<br/> <b>conjure</b> [1] 230/24<br/> <b>connect</b> [1] 234/3<br/> <b>connected</b> [5] 18/24 20/2<br/> 20/15 20/22 234/25<br/> <b>connection</b> [21] 11/4 11/22<br/> 12/22 13/25 15/2 15/7<br/> 21/24 27/9 27/13 30/14<br/> 45/6 45/23 48/21 49/8<br/> 50/19 58/21 63/7 131/1<br/> 204/16 210/3 215/3<br/> <b>consciousness</b> [1] 210/23<br/> <b>consequence</b> [4] 195/3<br/> 195/7 204/17 253/22<br/> <b>consequences</b> [3] 46/8<br/> 46/16 254/13<br/> <b>consider</b> [6] 82/25 193/14<br/> 215/5 215/9 216/7 246/7<br/> <b>considerable</b> [1] 28/13<br/> <b>consideration</b> [3] 175/21<br/> 216/18 234/17<br/> <b>considerations</b> [3] 25/16<br/> 152/14 159/12<br/> <b>considered</b> [2] 49/13<br/> 239/24<br/> <b>considering</b> [1] 181/4<br/> <b>consistent</b> [11] 18/8 42/23<br/> 44/19 49/22 65/1 149/5<br/> 150/6 164/13 187/6 236/3<br/> 255/15<br/> <b>consistently</b> [1] 254/2<br/> <b>conspiracy</b> [26] 28/19</p> |
|--|--|--|

|                                   |                                    |                                  |
|-----------------------------------|------------------------------------|----------------------------------|
| <b>C</b>                          | 124/2                              | 91/1 91/10 94/15 95/8            |
| <b>conspiracy...</b> [25] 29/14   | <b>contradicted</b> [2] 199/25     | 95/10 96/14 97/9 99/1            |
| 29/15 64/4 64/7 64/11             | 246/5                              | 101/9 114/7 118/9 118/23         |
| 64/17 75/13 78/20 79/10           | <b>contradicts</b> [2] 43/7        | 119/3 121/5 121/15 124/24        |
| 80/25 82/19 83/4 84/1             | 131/22                             | 128/6 128/7 131/13 138/5         |
| 104/19 179/8 200/19               | <b>contrary</b> [2] 220/18         | 141/14 142/1 142/3 145/17        |
| 209/25 212/3 216/12               | 250/16                             | 147/4 148/8 148/12 155/12        |
| 252/20 253/4 254/6                | <b>contributed</b> [2] 135/6       | 159/14 161/22 166/11             |
| 255/23 260/8 260/25               | 136/7                              | 166/12 166/14 167/10             |
| <b>conspirators</b> [4] 207/24    | <b>contributory</b> [1] 136/15     | 174/13 175/6 175/9 175/12        |
| 208/21 209/22 212/2               | <b>control</b> [22] 22/23 68/8     | 176/14 181/1 181/23 182/1        |
| <b>conspired</b> [1] 63/25        | 68/10 72/1 72/6 74/21              | 182/11 182/12 184/14             |
| <b>constitutional</b> [1] 218/6   | 75/3 77/17 87/14 87/19             | 185/14 185/16 186/14             |
| <b>construct</b> [1] 219/4        | 88/11 88/13 88/25 89/9             | 186/16 188/22 189/2              |
| <b>consulted</b> [3] 19/9 51/8    | 89/12 121/8 159/23 159/24          | 192/13 193/6 195/14              |
| 51/13                             | 159/25 159/25 161/9 190/2          | 227/16 262/5                     |
| <b>contacted</b> [1] 111/1        | <b>controls</b> [3] 77/18 121/8    | <b>corrected</b> [2] 130/17      |
| <b>contain</b> [1] 45/9           | 186/13                             | 207/12                           |
| <b>contained</b> [4] 14/9 18/19   | <b>convenient</b> [1] 130/7        | <b>correctly</b> [3] 42/20 146/5 |
| 214/11 226/14                     | <b>converge</b> [1] 70/23          | 190/15                           |
| <b>contend</b> [3] 96/8 215/4     | <b>conversation</b> [7] 71/8       | <b>correspond</b> [6] 32/13 35/6 |
| 215/8                             | 109/4 112/14 155/17                | 40/21 55/2 56/16 62/7            |
| <b>contending</b> [1] 68/5        | 208/13 208/14 208/15               | <b>corresponded</b> [2] 32/16    |
| <b>content</b> [4] 154/25 182/1   | <b>convey</b> [1] 163/6            | 51/14                            |
| 182/2 243/2                       | <b>copies</b> [2] 7/17 57/13       | <b>corresponds</b> [4] 32/20     |
| <b>contents</b> [1] 14/11         | <b>copilot</b> [1] 71/8            | 34/9 40/5 56/18                  |
| <b>context</b> [8] 11/9 53/13     | <b>copilot's</b> [1] 70/18         | <b>corroborate</b> [2] 66/6      |
| 118/2 203/5 207/8 210/12          | <b>copy</b> [10] 7/16 7/18 7/25    | 108/19                           |
| 210/21 246/23                     | 31/15 33/7 39/14 39/16             | <b>corroborates</b> [2] 35/8     |
| <b>continually</b> [1] 116/17     | 109/7 110/3 168/8                  | 55/4                             |
| <b>continuation</b> [1] 7/15      | <b>corkscrew</b> [1] 102/16        | <b>CORY</b> [1] 1/19             |
| <b>continue</b> [8] 102/13 103/3  | <b>corner</b> [6] 22/24 88/20      | <b>cost</b> [1] 42/12            |
| 103/10 119/15 119/16 135/3        | 109/10 114/19 128/24               | <b>costly</b> [1] 42/3           |
| 160/16 259/2                      | 174/5                              | <b>could</b> [117] 5/11 7/8 8/10 |
| <b>continued</b> [6] 69/25 79/10  | <b>corners</b> [1] 206/6           | 9/14 9/24 10/15 12/21            |
| 188/19 189/8 258/1 260/8          | <b>corporation</b> [3] 28/18       | 13/11 15/22 21/3 21/11           |
| <b>continues</b> [6] 22/19 22/19  | 75/12 257/23                       | 21/15 23/22 23/24 24/2           |
| 58/13 111/5 160/18 169/25         | <b>correct</b> [76] 7/13 11/2 11/3 | 26/9 26/13 27/16 29/18           |
| <b>continuing</b> [4] 41/14 187/3 | 15/8 15/9 15/13 19/1 19/15         | 30/5 33/21 34/12 34/21           |
| 188/11 248/22                     | 19/18 20/18 23/10 81/4             | 36/23 40/15 43/6 45/5            |
| <b>continuously</b> [1] 187/25    | 85/22 85/25 86/2 86/3              | 46/9 48/24 49/14 54/15           |
| <b>contradict</b> [2] 121/24      | 87/5 87/7 87/16 88/15              | 60/20 68/17 71/11 71/17          |

|   |   |  |
|---|---|--|
| <p><b>C</b><br/> <b>could...</b> [82] 72/20 73/21<br/> 73/24 73/24 81/25 82/12<br/> 83/8 84/8 95/7 95/17<br/> 95/24 98/13 101/5 101/7<br/> 101/14 101/19 102/1 102/2<br/> 106/17 113/20 116/18<br/> 117/15 117/15 118/25 121/7<br/> 121/23 131/20 135/13<br/> 139/24 139/25 141/15<br/> 146/8 147/18 151/17 153/5<br/> 153/8 153/13 163/23 164/8<br/> 164/9 164/21 166/13<br/> 168/19 173/12 178/25<br/> 186/22 188/13 189/24<br/> 192/14 194/11 194/14<br/> 197/24 204/22 204/23<br/> 206/6 206/15 208/23<br/> 214/19 214/21 214/22<br/> 221/1 222/17 223/22<br/> 230/5 230/14 230/15<br/> 231/3 231/22 234/22<br/> 236/20 236/21 237/25<br/> 238/11 238/12 240/5<br/> 242/10 244/19 244/20<br/> 249/14 253/6 255/22<br/> 256/13<br/> <b>couldn't</b> [9] 72/7 116/9<br/> 125/4 138/21 145/4 188/1<br/> 200/15 240/10 260/5<br/> <b>counsel</b> [8] 7/17 21/19<br/> 31/15 57/14 109/7 144/25<br/> 207/15 233/15<br/> <b>Counsels'</b> [1] 3/9<br/> <b>counter</b> [9] 89/19 95/10<br/> 96/3 234/23 239/15<br/> 249/17 250/13 250/15<br/> 261/1<br/> <b>counteract</b> [7] 70/2 71/13<br/> 71/23 75/24 75/25 159/16<br/> 161/21<br/> <b>counting</b> [1] 100/12</p> | <p><b>countries</b> [8] 48/3 52/2<br/> 54/22 194/20 221/18<br/> 228/17 246/19 247/14<br/> <b>country</b> [1] 221/14<br/> <b>couple</b> [15] 8/11 14/5 18/1<br/> 31/1 31/10 35/17 60/1<br/> 60/16 62/11 187/6 215/19<br/> 237/12 243/24 251/7<br/> 259/9<br/> <b>coupled</b> [1] 87/12<br/> <b>course</b> [17] 6/9 22/4<br/> 38/10 46/24 47/4 115/15<br/> 158/18 158/19 200/17<br/> 209/6 209/7 209/8 209/16<br/> 216/12 245/14 245/25<br/> 246/8<br/> <b>court</b> [81] 1/1 1/14 12/11<br/> 19/6 27/6 33/23 37/19<br/> 44/5 48/16 53/13 59/23<br/> 65/16 67/21 87/22 110/15<br/> 111/1 135/11 144/10 149/25<br/> 164/17 183/12 184/6 184/11<br/> 184/15 185/1 189/3 191/12<br/> 191/24 204/25 205/16<br/> 205/23 206/24 207/4<br/> 207/25 207/25 209/3<br/> 210/10 212/4 216/4 216/8<br/> 217/1 217/9 218/6 220/4<br/> 220/11 221/9 222/7<br/> 222/10 223/19 224/16<br/> 225/7 225/11 226/6 226/8<br/> 229/12 229/24 233/18<br/> 233/18 233/20 233/21<br/> 234/8 234/10 235/16<br/> 236/3 236/7 236/10<br/> 236/20 237/14 238/21<br/> 239/17 240/2 241/6 241/7<br/> 241/19 242/18 244/11<br/> 245/14 246/6 250/11<br/> 262/13 262/18<br/> <b>Court's</b> [21] 7/14 21/18<br/> 31/13 33/6 57/9 84/12</p> | <p>89/3 109/6 110/13 111/1<br/> 135/14 191/14 204/3 204/6<br/> 204/8 204/10 214/3<br/> 227/15 233/17 233/24<br/> 235/13<br/> <b>courtesy</b> [1] 7/16<br/> <b>courtroom</b> [12] 6/10 6/25<br/> 17/13 32/24 35/22 40/3<br/> 125/22 172/17 198/24<br/> 199/5 220/7 255/20<br/> <b>courts</b> [6] 171/17 252/9<br/> 252/16 252/22 254/1<br/> 254/2<br/> <b>cover</b> [4] 81/6 82/7<br/> 179/25 185/23<br/> <b>covered</b> [6] 27/1 79/3<br/> 83/17 84/11 103/25<br/> 200/23<br/> <b>covering</b> [2] 120/2 198/9<br/> <b>covers</b> [2] 13/18 257/12<br/> <b>COVID</b> [1] 262/8<br/> <b>COVID-19</b> [1] 262/8<br/> <b>cr</b> [1] 1/6<br/> <b>craft</b> [1] 13/21<br/> <b>crash</b> [79] 59/12 59/19<br/> 59/21 62/12 62/19 67/18<br/> 67/22 76/10 77/12 78/18<br/> 79/11 80/3 80/5 80/15<br/> 96/14 127/13 127/13<br/> 127/17 129/3 132/14<br/> 132/16 134/1 134/15 134/21<br/> 134/25 136/12 136/19<br/> 136/21 138/3 139/2 140/11<br/> 140/12 140/21 141/1 171/21<br/> 171/23 172/3 188/21<br/> 189/22 190/20 190/21<br/> 200/16 202/6 210/13<br/> 210/14 211/8 212/12<br/> 212/24 213/19 214/6<br/> 215/14 215/15 217/10<br/> 217/25 220/22 222/5<br/> 222/12 223/18 224/13</p> |
|---|---|--|



|  |   |   |
|--|---|---|
| <p><b>C</b></p> <p><b>crash...</b> [20] 224/19<br/> 225/7 225/8 225/9<br/> 225/23 225/25 226/1<br/> 226/4 227/3 227/20<br/> 231/20 231/20 232/15<br/> 232/22 233/1 239/20<br/> 253/7 258/1 259/21 260/2</p> <p><b>crashed</b> [17] 59/14 62/14<br/> 66/24 67/12 85/5 137/6<br/> 137/8 137/11 137/14 138/7<br/> 138/11 192/10 201/22<br/> 223/21 225/1 225/4<br/> 225/19</p> <p><b>crashes</b> [46] 18/25 31/2<br/> 31/3 59/10 66/13 67/8<br/> 67/9 78/17 80/1 80/12<br/> 84/3 84/7 85/9 87/3<br/> 87/15 100/15 100/17 103/9<br/> 104/12 104/17 122/19<br/> 135/2 136/11 136/14<br/> 173/20 187/9 188/25<br/> 210/8 210/11 210/21 211/4<br/> 211/7 211/11 211/12 215/3<br/> 216/12 216/13 217/25<br/> 220/12 220/17 226/16<br/> 227/11 231/18 231/18<br/> 237/3 258/12</p> <p><b>crashing</b> [2] 69/24 202/19</p> <p><b>crawled</b> [1] 107/5</p> <p><b>crazy</b> [6] 131/25 186/20<br/> 186/21 187/1 187/5 187/8</p> <p><b>create</b> [6] 28/14 40/17<br/> 82/19 83/4 251/2 256/1</p> <p><b>created</b> [4] 82/21 83/6<br/> 84/1 257/3</p> <p><b>creates</b> [1] 252/22</p> <p><b>creating</b> [2] 202/13 202/17</p> <p><b>credibility</b> [2] 35/10 37/5</p> <p><b>credit</b> [1] 105/23</p> <p><b>crew</b> [20] 59/15 62/15<br/> 67/13 73/25 76/4 76/21</p> | <p>76/23 81/1 82/20 83/5<br/> 84/5 84/8 107/9 164/4</p> <p>190/10 190/11 212/11 239/5<br/> 255/11 257/16</p> <p><b>crews</b> [2] 161/20 162/12</p> <p><b>crime</b> [37] 76/8 83/4<br/> 195/3 197/2 197/18 197/24<br/> 197/25 198/3 201/20<br/> 202/22 202/23 203/10<br/> 204/4 232/15 233/25<br/> 234/1 234/3 234/6 234/6<br/> 234/7 234/13 234/16<br/> 234/17 235/5 235/9<br/> 236/12 242/24 244/23<br/> 247/6 249/4 249/9 257/17<br/> 258/17 258/18 258/23<br/> 261/3 261/5</p> <p><b>criminal</b> [26] 1/20 28/19<br/> 39/24 81/11 81/13 90/16<br/> 118/18 131/1 203/6 205/17<br/> 205/20 207/5 208/2<br/> 209/2 209/5 210/18 211/4<br/> 211/7 218/5 218/16 226/8<br/> 234/1 252/20 253/22<br/> 254/6 260/25</p> <p><b>criminally</b> [1] 257/24</p> <p><b>criteria</b> [1] 23/19</p> <p><b>critical</b> [15] 40/12 40/12<br/> 71/20 71/21 99/21 102/4<br/> 102/11 107/17 118/1 120/3<br/> 121/7 124/18 125/1 221/6<br/> 224/6</p> <p><b>cross</b> [19] 3/6 3/7 6/15<br/> 35/14 35/24 36/19 38/22<br/> 39/3 85/17 144/15 151/25<br/> 153/3 194/10 195/12 199/4<br/> 219/11 219/12 235/22<br/> 247/16</p> <p><b>cross-currents</b> [1] 199/4</p> <p><b>cross-examination</b> [14]<br/> 3/6 3/7 6/15 36/19 38/22<br/> 39/3 85/17 144/15 151/25</p> | <p>153/3 195/12 219/11 219/12<br/> 247/16</p> <p><b>cross-examine</b> [1] 235/22</p> <p><b>cross-examined</b> [3] 35/14<br/> 35/24 194/10</p> <p><b>crossed</b> [1] 192/7</p> <p><b>cruise</b> [1] 78/8</p> <p><b>crystallize</b> [1] 198/2</p> <p><b>culminating</b> [1] 14/15</p> <p><b>curious</b> [2] 148/25 156/24</p> <p><b>current</b> [3] 6/24 12/1 14/8</p> <p><b>currently</b> [6] 11/10 11/15<br/> 11/25 20/9 75/22 116/6</p> <p><b>currents</b> [1] 199/4</p> <p><b>customer</b> [3] 55/21 56/4<br/> 56/15</p> <p><b>customers</b> [6] 54/14 62/1<br/> 124/11 170/17 170/21<br/> 170/22</p> <p><b>cut</b> [4] 89/12 126/8 160/15<br/> 192/23</p> <p><b>cutoff</b> [1] 177/1</p> <p><b>cutout</b> [15] 74/24 141/10<br/> 141/20 141/23 142/8 142/11<br/> 142/17 142/20 160/19<br/> 192/22 223/25 224/1<br/> 224/25 225/14 232/10</p> <p><b>cutouts</b> [1] 159/19</p> <p><b>CV</b> [9] 8/9 8/10 9/21 10/12<br/> 10/25 13/9 15/6 15/23<br/> 48/19</p> <p><b>CVRA</b> [4] 203/4 242/22<br/> 242/24 252/2</p> <p><b>cycles</b> [1] 165/19</p> <hr/> <p><b>D</b></p> <p><b>D.C</b> [2] 1/21 2/21</p> <p><b>DAC</b> [1] 10/13</p> <p><b>Dallas</b> [1] 2/14</p> <p><b>danger</b> [4] 84/6 254/3<br/> 254/7 254/8</p> <p><b>Danielle</b> [1] 5/19</p> <p><b>dark</b> [1] 260/8</p> |
|--|---|---|

|                                   |                                    |                                 |
|-----------------------------------|------------------------------------|---------------------------------|
| <b>D</b>                          | <b>deceived [2]</b> 36/11 253/13   | <b>defrauded [1]</b> 45/1       |
| <b>data [13]</b> 9/19 66/18       | <b>deceiving [3]</b> 253/5 254/5   | <b>defrauding [1]</b> 76/8      |
| 96/13 115/8 135/8 135/15          | 257/24                             | <b>degree [23]</b> 8/14 16/14   |
| 135/17 171/8 174/2 174/9          | <b>deception [1]</b> 258/1         | 16/25 24/18 24/19 56/18         |
| 174/9 176/8 177/10                | <b>decide [6]</b> 26/20 124/1      | 65/7 106/17 131/8 139/7         |
| <b>date [2]</b> 114/5 195/21      | 175/19 175/25 176/4                | 139/10 139/16 139/17 140/1      |
| <b>dated [3]</b> 8/1 188/20       | 254/10                             | 147/14 176/2 180/10             |
| 190/21                            | <b>decided [5]</b> 12/3 152/18     | 180/13 210/7 212/9 213/13       |
| <b>Daubert [13]</b> 196/24        | 172/25 173/13 173/17               | 221/2 222/16                    |
| 196/24 216/21 216/22              | <b>deciding [3]</b> 149/1 150/21   | <b>degrees [7]</b> 8/17 85/13   |
| 236/6 236/11 248/5                | 223/15                             | 139/15 139/19 139/22            |
| 248/16 249/22 249/25              | <b>decision [16]</b> 40/15 124/23  | 139/22 222/19                   |
| 250/5 250/10 250/19               | 174/12 175/15 176/20               | <b>delegated [1]</b> 175/4      |
| <b>daughter [1]</b> 5/21          | 177/9 181/4 182/10 203/18          | <b>demonstrably [1]</b> 240/1   |
| <b>David [2]</b> 5/18 135/25      | 209/18 215/1 227/10                | <b>demonstrate [1]</b> 158/24   |
| <b>day [23]</b> 12/4 23/8 23/8    | 245/15 255/22 256/13               | <b>demonstrating [1]</b> 222/1  |
| 107/4 128/16 128/22 137/8         | 256/14                             | <b>denied [2]</b> 110/18 226/19 |
| 139/2 160/23 188/21               | <b>decision-making [1]</b> 124/23  | <b>denying [1]</b> 109/18       |
| 190/21 192/9 192/15 193/5         | <b>decisions [8]</b> 175/11 177/4  | <b>Department [23]</b> 6/18     |
| 193/14 193/23 193/23              | 177/14 181/15 182/1 185/2          | 15/16 34/11 35/23 36/10         |
| 206/12 235/3 244/17               | 237/18 250/5                       | 36/17 36/21 39/23 40/5          |
| 247/17 255/13 262/15              | <b>decreased [1]</b> 206/13        | 40/20 41/5 44/4 109/16          |
| <b>days [10]</b> 12/6 14/5 115/24 | <b>deemed [1]</b> 114/23           | 109/22 121/25 191/1 203/6       |
| 137/22 167/20 167/20              | <b>deeper [1]</b> 147/18           | 215/16 234/6 235/6              |
| 245/3 254/16 259/20               | <b>defeated [4]</b> 45/1 64/10     | 246/23 255/19 256/6             |
| 260/2                             | 64/16 239/18                       | <b>depending [2]</b> 125/25     |
| <b>de [2]</b> 6/1 6/2             | <b>defeats [2]</b> 239/20 240/18   | 231/14                          |
| <b>deactivate [2]</b> 159/19      | <b>defendant [7]</b> 1/10 40/8     | <b>depends [1]</b> 12/3         |
| 232/10                            | 145/14 234/19 234/23               | <b>depiction [1]</b> 254/18     |
| <b>dead [1]</b> 194/8             | 235/3 252/24                       | <b>deploy [1]</b> 109/22        |
| <b>dead-heading [1]</b> 194/8     | <b>defendants [1]</b> 252/17       | <b>deposition [1]</b> 15/6      |
| <b>deal [6]</b> 29/8 66/19 83/13  | <b>defense [4]</b> 122/1 146/2     | <b>depositions [1]</b> 145/14   |
| 203/6 231/11 231/11               | 156/18 244/3                       | <b>deputy [1]</b> 17/13         |
| <b>dealing [1]</b> 121/21         | <b>defer [2]</b> 54/22 201/6       | <b>DER [8]</b> 9/22 9/25 47/10  |
| <b>dealt [2]</b> 91/3 123/19      | <b>Deferred [3]</b> 18/2 18/4      | 174/24 176/3 177/5 184/18       |
| <b>Dearing [1]</b> 250/4          | 90/9                               | 195/21                          |
| <b>death [1]</b> 72/17            | <b>define [1]</b> 183/17           | <b>describe [6]</b> 12/21 23/24 |
| <b>deaths [1]</b> 247/7           | <b>defined [1]</b> 212/5           | 80/4 166/5 166/15 209/20        |
| <b>debating [1]</b> 252/20        | <b>definition [5]</b> 154/13 197/6 | <b>described [11]</b> 22/17     |
| <b>decades [3]</b> 46/24 67/4     | 202/6 229/20 232/25                | 23/18 68/19 73/1 90/7           |
| 67/5                              | <b>definitive [1]</b> 252/7        | 114/21 125/2 160/22             |
| <b>deceive [1]</b> 252/21         | <b>defraud [1]</b> 75/13           | 180/14 205/16 215/24            |

|  |  |   |
|--|--|---|
| <p><b>D</b></p> <p><b>describes [2]</b> 186/20<br/>208/18</p> <p><b>describing [5]</b> 30/1 68/25<br/>95/17 167/17 168/6</p> <p><b>description [13]</b> 16/7 19/21<br/>20/5 29/3 95/15 96/24<br/>112/20 130/10 169/2<br/>169/21 204/11 208/14<br/>208/14</p> <p><b>descriptions [2]</b> 20/25<br/>87/13</p> <p><b>deserves [1]</b> 214/5</p> <p><b>design [17]</b> 18/12 24/24<br/>95/13 96/21 97/4 98/3<br/>99/3 100/19 101/8 190/6<br/>190/11 228/6 228/6 230/6<br/>230/12 231/2 255/12</p> <p><b>designated [3]</b> 9/22 10/2<br/>109/14</p> <p><b>designed [23]</b> 22/21 24/25<br/>47/22 79/20 87/21 93/13<br/>94/5 96/12 98/8 98/11<br/>100/20 102/3 102/24 131/6<br/>136/6 147/25 220/24<br/>221/5 229/25 230/1<br/>230/22 242/2 252/14</p> <p><b>designing [1]</b> 259/8</p> <p><b>desired [1]</b> 240/14</p> <p><b>desperately [2]</b> 257/22<br/>259/25</p> <p><b>despite [4]</b> 140/20 220/23<br/>224/22 225/20</p> <p><b>destination [1]</b> 201/17</p> <p><b>detailed [3]</b> 31/25 180/14<br/>204/11</p> <p><b>details [3]</b> 14/3 20/14<br/>208/17</p> <p><b>determination [11]</b> 34/16<br/>35/1 42/21 67/19 108/22<br/>176/9 178/12 181/11 184/12<br/>194/12 216/8</p> | <p><b>determinations [5]</b> 48/2<br/>176/18 176/23 184/9<br/>200/5</p> <p><b>determine [6]</b> 30/15 34/21<br/>67/17 175/18 175/22 197/3</p> <p><b>determined [4]</b> 204/20<br/>234/6 234/15 239/24</p> <p><b>determining [1]</b> 153/5</p> <p><b>developed [7]</b> 47/22 48/8<br/>116/7 116/8 116/11 117/7<br/>245/3</p> <p><b>development [10]</b> 18/13<br/>115/16 115/20 116/13<br/>116/19 118/21 119/9 207/10<br/>207/22 230/19</p> <p><b>diagram [1]</b> 229/18</p> <p><b>did [145]</b> 8/13 14/5 18/19<br/>18/21 19/2 19/4 25/5<br/>25/19 31/5 31/8 31/10<br/>31/12 36/11 36/17 37/2<br/>37/3 37/18 43/23 47/4<br/>48/20 49/7 50/16 50/18<br/>50/19 50/20 60/7 60/11<br/>60/14 62/25 63/2 63/4<br/>63/5 63/9 66/25 67/17<br/>67/19 67/22 75/12 82/19<br/>83/4 83/6 89/12 90/16<br/>95/1 99/2 99/9 101/7<br/>102/1 106/3 106/9 106/11<br/>107/19 114/13 118/14<br/>118/15 119/20 122/12<br/>122/15 122/20 125/9<br/>126/15 126/22 127/1<br/>127/14 127/18 129/6<br/>130/15 132/19 132/24<br/>133/5 133/6 133/10 133/19<br/>135/23 135/24 136/21<br/>138/9 140/11 140/12 140/13<br/>140/15 140/19 141/1 142/6<br/>142/10 146/18 150/2<br/>150/18 150/21 151/24<br/>153/2 153/4 154/13 156/1</p> | <p>156/17 156/19 156/22<br/>157/2 157/4 158/21 159/19<br/>162/8 164/18 164/19<br/>164/20 167/19 169/1 170/7<br/>173/5 179/19 180/3 191/21<br/>192/16 198/9 198/14<br/>198/17 202/17 203/11<br/>205/6 208/1 211/1 211/2<br/>212/18 215/2 219/24<br/>222/24 223/5 224/3<br/>225/8 227/24 228/18<br/>239/10 240/1 240/9 243/8<br/>248/4 248/6 248/6 249/8<br/>249/17 255/5 255/7<br/>256/14 257/14 258/18</p> <p><b>didn't [80]</b> 49/13 69/12<br/>71/24 78/1 80/16 86/6<br/>89/11 89/14 93/4 94/24<br/>95/18 96/2 96/2 96/3<br/>96/25 99/18 101/8 102/3<br/>107/22 113/14 119/24<br/>120/15 122/16 122/20<br/>124/18 124/19 125/1 125/8<br/>125/13 125/16 126/9 126/11<br/>128/11 129/13 129/14 131/9<br/>132/17 134/5 134/10 134/11<br/>140/16 140/21 141/7 141/9<br/>141/12 141/18 141/19<br/>141/22 146/2 146/5 148/13<br/>151/10 156/20 160/14 161/8<br/>161/25 162/1 162/2 162/10<br/>163/9 164/9 164/11 166/3<br/>168/9 173/18 176/2 187/15<br/>201/20 201/21 208/17<br/>212/11 223/12 223/13<br/>224/9 224/12 228/7<br/>249/16 257/20 258/23<br/>260/11</p> <p><b>died [2]</b> 5/19 260/21</p> <p><b>differ [1]</b> 51/17</p> <p><b>difference [6]</b> 90/4 114/11<br/>139/11 139/11 139/12</p> |
|--|--|---|

|                                   |                                    |                                    |
|-----------------------------------|------------------------------------|------------------------------------|
| <b>D</b>                          | 161/4 161/20 214/22                | <b>disclosing</b> [4] 109/23       |
| <b>difference...</b> [1] 139/16   | <b>directing</b> [2] 134/21 162/12 | 125/17 126/15 127/9                |
| <b>differences</b> [2] 56/11      | <b>direction</b> [1] 211/21        | <b>disclosure</b> [4] 87/12        |
| 221/11                            | <b>directions</b> [1] 180/21       | 119/22 120/5 120/25                |
| <b>different</b> [35] 23/19 23/21 | <b>directive</b> [14] 49/20 128/6  | <b>discovered</b> [2] 108/21       |
| 27/7 28/21 29/9 29/11             | 128/18 132/20 133/20               | 119/14                             |
| 29/12 67/9 69/1 70/5 70/7         | 134/2 161/20 164/1 164/3           | <b>discrepancy</b> [3] 116/22      |
| 73/6 73/25 75/19 76/4             | 189/1 224/23 225/13                | 117/5 121/18                       |
| 81/2 81/5 82/7 82/18              | 232/2 259/20                       | <b>discuss</b> [4] 13/23 56/23     |
| 115/9 115/11 167/1 180/11         | <b>directives</b> [2] 49/18        | 119/15 164/20                      |
| 181/4 194/12 198/1 198/7          | 232/23                             | <b>discussed</b> [8] 54/2 58/20    |
| 198/13 205/17 215/21              | <b>directly</b> [14] 15/25 32/20   | 91/25 93/16 95/3 107/23            |
| 216/10 235/2 241/16               | 35/8 51/14 55/4 87/15              | 132/10 172/22                      |
| 243/3 243/5                       | 123/19 138/3 174/25 181/9          | <b>discusses</b> [1] 93/6          |
| <b>differential</b> [1] 73/3      | 205/9 210/10 217/25                | <b>discussing</b> [5] 58/25 98/6   |
| <b>differentiate</b> [4] 84/8     | 220/21                             | 132/2 157/8 187/10                 |
| 115/2 161/7 166/16                | <b>directness</b> [5] 204/15       | <b>discussion</b> [4] 58/23 144/2  |
| <b>differentiation</b> [2] 27/18  | 204/21 211/22 213/9                | 251/23 256/23                      |
| 161/11                            | 213/11                             | <b>dismissed</b> [1] 57/1          |
| <b>differentiator</b> [1] 193/20  | <b>directors</b> [1] 170/18        | <b>disorienting</b> [1] 223/4      |
| <b>difficult</b> [4] 101/22       | <b>disable</b> [2] 141/23 142/21   | <b>disposed</b> [1] 203/2          |
| 206/22 207/7 251/10               | <b>disabled</b> [2] 159/11 160/19  | <b>disposition</b> [1] 203/9       |
| <b>difficulties</b> [1] 48/25     | <b>disabling</b> [3] 80/19 160/5   | <b>dispute</b> [2] 79/15 79/20     |
| <b>digesting</b> [1] 100/17       | 160/17                             | <b>disputed</b> [2] 201/8 201/8    |
| <b>digital</b> [3] 66/18 70/21    | <b>disadvantage</b> [1] 223/8      | <b>disputing</b> [1] 106/7         |
| 174/9                             | <b>disagree</b> [8] 73/2 73/2      | <b>disservice</b> [2] 135/10       |
| <b>direct</b> [45] 3/5 7/6 33/18  | 124/11 124/15 125/16               | 135/14                             |
| 33/21 38/20 40/1 53/17            | 177/12 242/20 247/21               | <b>distinct</b> [1] 177/1          |
| 57/19 60/15 60/25 67/11           | <b>disagreeing</b> [1] 177/20      | <b>distinction</b> [4] 100/22      |
| 106/3 117/1 121/21 122/9          | <b>disappeared</b> [1] 146/19      | 106/20 135/17 163/8                |
| 123/17 123/23 131/20              | <b>disciplinary</b> [2] 145/25     | <b>distortion</b> [1] 258/9        |
| 136/23 147/11 150/15              | 146/6                              | <b>distracting</b> [4] 72/17 119/1 |
| 152/5 152/8 152/16 157/6          | <b>disclaims</b> [1] 210/16        | 141/16 223/3                       |
| 159/14 169/14 171/14 173/8        | <b>disclose</b> [9] 25/19 26/21    | <b>distractions</b> [1] 119/5      |
| 179/7 197/17 201/23               | 36/11 106/4 122/16 126/11          | <b>DISTRICT</b> [5] 1/1 1/2 1/14   |
| 202/7 202/20 220/15               | 179/20 180/3 201/1                 | 205/16 262/18                      |
| 224/6 225/24 226/3                | <b>disclosed</b> [16] 37/19 75/15  | <b>dive</b> [5] 67/7 69/15 71/10   |
| 226/15 227/1 234/3                | 88/6 91/5 94/12 126/10             | 89/10 147/18                       |
| 235/16 242/18 247/6               | 179/13 179/16 180/12               | <b>dividing</b> [1] 125/13         |
| 251/6                             | 229/16 229/21 236/23               | <b>diving</b> [1] 118/11           |
| <b>Direct.....</b> 33 [1] 4/18    | 237/8 237/18 240/18                | <b>DIVISION</b> [3] 1/3 1/20       |
| <b>directed</b> [5] 55/25 128/12  | 241/16                             | 262/19                             |



|   |  |  |
|---|--|--|
| <p><b>D</b><br/> <b>do</b> [198] 5/6 6/5 6/17<br/> 7/22 7/23 8/17 8/18 10/22<br/> 11/7 12/20 17/4 20/1 21/5<br/> 21/7 21/17 31/19 31/20<br/> 32/21 33/11 33/13 34/8<br/> 35/9 35/18 39/19 39/21<br/> 45/7 45/24 47/11 48/14<br/> 52/18 52/20 53/24 53/25<br/> 54/25 55/1 55/10 55/13<br/> 58/17 58/18 61/9 61/10<br/> 62/5 62/6 66/21 69/19<br/> 74/8 74/19 78/10 87/19<br/> 92/13 92/16 92/25 93/8<br/> 94/18 94/21 105/4 105/21<br/> 106/16 110/3 110/4 113/4<br/> 113/5 113/12 113/13 114/1<br/> 114/2 114/9 114/10 114/11<br/> 115/6 115/19 116/8 116/10<br/> 116/21 116/24 117/4 117/8<br/> 117/11 117/13 120/8 121/6<br/> 121/11 122/4 122/10 122/16<br/> 122/20 123/6 128/11<br/> 128/15 136/3 136/5 137/23<br/> 139/8 139/9 139/18 140/1<br/> 142/3 142/7 142/10 145/2<br/> 145/3 145/8 145/12 146/10<br/> 147/12 148/19 148/20<br/> 149/25 150/1 151/22<br/> 151/23 152/6 153/9 153/21<br/> 153/24 154/2 154/4 155/2<br/> 157/3 157/4 163/15 167/15<br/> 168/8 169/10 171/1 171/2<br/> 171/3 171/20 172/17<br/> 172/25 173/14 174/11<br/> 174/17 175/13 177/7<br/> 177/16 177/17 177/25<br/> 178/3 179/9 179/13 179/21<br/> 179/22 180/21 180/23<br/> 183/15 185/11 185/13 186/1<br/> 186/2 187/22 191/8 192/17<br/> 196/8 196/13 196/22 198/7</p> | <p>200/11 201/3 201/4 203/11<br/> 203/17 211/14 211/15<br/> 211/20 215/4 216/7 222/21<br/> 223/15 223/25 224/3<br/> 225/18 230/4 232/22<br/> 233/1 234/5 235/2 235/6<br/> 241/20 243/6 243/19<br/> 245/1 246/19 248/2 248/2<br/> 248/8 248/21 249/12<br/> 249/17 251/3 253/13<br/> 253/15 258/8 258/16<br/> 259/7 260/5 260/16<br/> 260/22<br/> <b>docket</b> [8] 81/11 81/13<br/> 81/17 110/13 111/13 251/5<br/> 252/3 253/25<br/> <b>document</b> [10] 7/22 31/19<br/> 31/21 32/2 33/11 55/22<br/> 94/20 109/9 168/21 219/16<br/> <b>documents</b> [7] 77/4 92/24<br/> 109/17 111/20 154/17<br/> 154/19 156/13<br/> <b>does</b> [70] 28/25 32/2 32/5<br/> 35/6 38/18 40/20 43/8<br/> 43/11 43/13 43/14 43/15<br/> 43/18 43/19 43/21 43/22<br/> 43/24 43/25 44/2 44/4<br/> 45/9 47/25 54/11 54/23<br/> 55/2 56/16 56/22 61/12<br/> 62/7 62/24 66/3 89/5<br/> 91/11 93/11 94/3 95/11<br/> 96/20 102/14 107/18<br/> 107/18 113/17 113/18<br/> 113/23 122/17 135/10<br/> 135/14 145/18 148/22<br/> 148/24 162/22 165/17<br/> 165/17 166/4 166/15 173/8<br/> 179/2 201/6 203/4 204/3<br/> 216/1 226/23 232/13<br/> 235/18 239/17 239/18<br/> 239/19 241/14 243/9<br/> 251/17 258/24 261/3</p> | <p><b>doesn't</b> [27] 40/23 52/7<br/> 79/16 107/13 124/1 125/21<br/> 145/24 146/12 166/6<br/> 166/11 166/15 166/18<br/> 166/24 168/4 168/16<br/> 178/16 178/23 179/4<br/> 204/13 205/11 212/4<br/> 215/23 217/7 217/11<br/> 234/20 234/24 254/10<br/> <b>doing</b> [10] 34/21 50/10<br/> 96/24 170/11 187/21<br/> 187/24 188/4 188/24<br/> 216/2 255/2<br/> <b>dollar</b> [5] 27/19 42/5 92/5<br/> 116/15 206/13<br/> <b>dollars</b> [2] 42/12 200/25<br/> <b>domestic</b> [3] 46/23 48/14<br/> 54/17<br/> <b>domestic-based</b> [1] 48/14<br/> <b>domestically</b> [1] 50/11<br/> <b>domino</b> [1] 203/15<br/> <b>dominoes</b> [1] 202/25<br/> <b>don't</b> [121] 8/9 11/20<br/> 21/12 26/21 30/21 50/6<br/> 51/23 55/24 58/11 67/24<br/> 69/18 69/21 69/21 70/15<br/> 72/23 77/22 79/16 89/2<br/> 89/18 90/13 91/20 93/18<br/> 94/19 96/4 96/4 96/9<br/> 97/12 97/24 99/23 107/3<br/> 109/20 110/17 111/8 111/23<br/> 113/7 115/11 115/13 116/19<br/> 117/10 121/25 122/22<br/> 125/7 128/21 130/6 134/3<br/> 134/4 134/24 134/25<br/> 135/11 136/8 136/22<br/> 139/20 142/9 143/12<br/> 143/23 144/8 145/6<br/> 149/20 150/4 150/8 150/12<br/> 150/23 153/4 154/5 154/10<br/> 154/15 155/14 156/1<br/> 156/23 161/14 161/17 168/8</p> |
|---|--|--|

**D**  
**don't...** [49] 172/1 172/2  
 172/3 172/14 173/16  
 173/18 173/24 174/7  
 175/24 176/11 178/13  
 180/24 184/19 191/15  
 195/18 196/17 197/19  
 199/24 201/7 207/17  
 212/4 213/21 215/8 215/20  
 216/20 216/20 217/5  
 217/12 220/5 221/24  
 225/17 228/13 228/13  
 228/19 229/11 229/11  
 230/10 231/7 232/18  
 238/10 245/2 245/17  
 246/5 246/20 247/8  
 250/7 250/11 255/16  
 256/14  
**done** [32] 20/13 27/4  
 35/25 36/1 42/19 78/11  
 105/5 105/9 105/14 105/16  
 111/10 121/14 122/22  
 129/25 130/1 147/7 189/7  
 189/18 191/7 191/7 220/7  
 226/7 226/11 231/7  
 240/17 240/23 241/1  
 243/3 243/4 246/21  
 248/23 249/16  
**door** [2] 84/21 123/16  
**double** [2] 17/12 112/1  
**double-check** [2] 17/12  
 112/1  
**doubt** [6] 172/10 208/24  
 212/15 217/15 218/17  
 256/19  
**down** [54] 22/8 25/15  
 29/21 31/10 34/13 40/10  
 40/11 43/5 54/20 68/4  
 70/6 71/24 72/5 74/21  
 75/1 87/9 88/12 89/10  
 89/17 91/25 92/1 92/10  
 93/23 95/8 95/25 101/6

101/20 103/3 104/23 106/1  
 106/18 112/16 113/12  
 113/21 117/14 125/23  
 135/12 152/25 169/3  
 169/23 187/4 196/4 218/16  
 221/1 228/10 231/13  
 231/22 232/8 253/16  
 254/16 255/14 257/19  
 260/4 260/16  
**downstream** [1] 234/19  
**dozen** [2] 15/11 15/14  
**DPA** [10] 90/19 104/20  
 171/13 178/14 178/23  
 226/14 233/25 234/1  
 238/5 238/6  
**Dr.** [5] 6/10 6/23 7/1 82/2  
 191/15  
**Dr. Storesund** [5] 6/10  
 6/23 7/1 82/2 191/15  
**draft** [1] 167/21  
**dramatic** [2] 213/13  
 213/23  
**draw** [4] 73/12 119/17  
 164/6 243/19  
**drawn** [2] 152/9 152/13  
**dressings** [1] 217/19  
**drive** [2] 73/20 88/11  
**driven** [3] 22/13 163/12  
 163/20  
**drives** [2] 126/21 127/1  
**driving** [1] 74/21  
**DRs** [1] 117/9  
**duckling** [1] 217/20  
**due** [9] 11/11 30/24 42/8  
 68/6 105/23 201/20  
 237/21 237/22 262/8  
**DUFFY** [4] 1/18 6/7  
 233/21 235/11  
**Duffy**.....  
 .....**203** [1] 3/11  
**dunk** [2] 202/4 242/21  
**duration** [2] 75/3 80/13

**during** [24] 6/8 93/16  
 104/10 104/19 110/9 115/15  
 118/21 119/8 122/9 132/16  
 141/6 142/10 169/4 169/5  
 169/24 171/22 178/4  
 197/13 206/17 209/3  
 216/11 228/4 230/19  
 241/10  
**duties** [3] 12/21 13/6 115/2  
**duty** [1] 49/13  
**dynamometer** [1] 10/9

---

**E**  
**e.g** [1] 54/24  
**each** [10] 43/6 73/10  
 87/16 148/21 158/1 162/18  
 204/19 205/9 213/12  
 247/18  
**eager** [2] 49/11 50/8  
**eagerness** [1] 49/24  
**earlier** [21] 17/15 50/12  
 87/25 97/13 123/7 123/11  
 133/1 136/20 137/22  
 141/15 142/13 149/24  
 151/20 156/3 162/8 167/7  
 178/1 187/7 194/25 230/19  
 235/3  
**early** [5] 129/14 147/10  
 158/16 238/22 244/13  
**EASA** [9] 51/14 56/7  
 57/20 57/22 57/25 58/2  
 58/5 58/6 64/8  
**easier** [1] 156/8  
**easiest** [1] 201/11  
**education** [5] 8/13 43/8  
 75/18 83/4 148/10  
**effect** [28] 77/6 77/7  
 77/9 77/11 77/13 77/19  
 77/23 78/3 80/9 88/11  
 89/17 89/23 95/7 96/7  
 106/14 117/6 126/25 127/3  
 134/12 164/3 166/23  
 175/20 175/21 176/6 177/2

|                                   |                                  |                                  |
|-----------------------------------|----------------------------------|----------------------------------|
| <b>E</b>                          | <b>elsewhere</b> [2] 211/8 236/2 | 119/23 120/21 124/22             |
| <b>effect</b> ... [3] 177/2 238/7 | <b>cluding</b> [1] 202/11        | 124/25 125/4 129/17 130/8        |
| 253/3                             | <b>email</b> [15] 53/14 54/3     | 130/12 131/11 133/25 134/8       |
| <b>effected</b> [3] 89/9 90/6     | 55/20 56/3 56/14 56/16           | 134/23 135/20 143/17             |
| 192/22                            | 56/22 57/16 57/20 58/5           | 144/2 208/3 210/13 210/15        |
| <b>effectively</b> [2] 95/8       | 58/13 91/24 186/18 207/3         | 210/19 212/7 220/16              |
| 222/17                            | 211/21                           | 220/21 221/5 224/18              |
| <b>effects</b> [12] 30/25 68/15   | <b>Email</b> .....               | 225/25 226/3 226/9               |
| 68/18 70/2 76/14 119/1            | ..... <b>82</b> [2] 4/8 4/9      | 230/11 231/5 231/23              |
| 126/21 126/23 136/15              | <b>Email</b> .....               | 236/23 238/3 238/3               |
| 162/6 166/13 173/22               | <b>57</b> [1] 4/20               | 240/8 241/24 241/24              |
| <b>effort</b> [1] 211/3           | <b>emails</b> [16] 61/25 154/2   | <b>employees</b> [14] 53/15 54/2 |
| <b>efforts</b> [3] 46/9 61/14     | 154/6 154/14 154/15              | 54/12 54/21 57/16 58/20          |
| 252/17                            | 154/25 155/2 181/2 181/6         | 120/7 143/22 154/2               |
| <b>eight</b> [8] 18/23 99/24      | 181/14 215/6 215/9 234/11        | 155/20 201/5 208/2 240/7         |
| 100/3 100/8 103/18 117/16         | 234/12 246/7 259/2               | 240/12                           |
| 124/13 198/12                     | <b>embarking</b> [1] 172/17      | <b>employment</b> [3] 10/1 11/4  |
| <b>either</b> [14] 74/15 77/22    | <b>embedded</b> [3] 169/2        | 48/22                            |
| 85/11 91/23 97/11 98/23           | 215/22 219/9                     | <b>encapsulated</b> [1] 10/18    |
| 101/3 164/9 178/17 199/24         | <b>embodies</b> [1] 250/6        | <b>encounter</b> [2] 23/8 116/11 |
| 220/17 220/22 226/15              | <b>emergencies</b> [1] 29/8      | <b>encountered</b> [1] 162/13    |
| 240/15                            | <b>emergency</b> [14] 128/6      | <b>encountering</b> [1] 83/14    |
| <b>electric</b> [17] 74/20 89/9   | 128/11 128/13 128/16             | <b>encourage</b> [1] 258/10      |
| 89/11 89/24 90/5 159/17           | 128/18 132/20 134/2              | <b>end</b> [14] 27/16 124/8      |
| 159/21 160/4 161/11 161/12        | 158/23 164/6 189/1 189/6         | 145/20 160/6 162/25              |
| 163/2 163/10 163/18               | 224/23 225/13 232/1              | 165/4 195/5 195/12 196/21        |
| 164/21 166/20 166/23              | <b>eminent</b> [1] 47/14         | 198/11 202/18 227/19             |
| 167/3                             | <b>emphasize</b> [5] 166/18      | 253/15 254/9                     |
| <b>electronically</b> [1] 141/24  | 210/9 210/10 224/16              | <b>endeavor</b> [1] 233/15       |
| <b>elements</b> [4] 40/14 230/7   | 252/10                           | <b>ended</b> [6] 67/20 67/24     |
| 230/12 231/2                      | <b>employed</b> [3] 149/1 149/6  | 88/16 90/3 192/15 260/17         |
| <b>elevated</b> [7] 168/15 169/4  | 175/3                            | <b>endorsing</b> [1] 155/11      |
| 169/10 169/12 169/15              | <b>employee</b> [71] 44/25       | <b>engage</b> [1] 75/13          |
| 169/24 170/10                     | 44/25 45/13 45/13 45/16          | <b>engaged</b> [2] 106/5 123/13  |
| <b>elicited</b> [1] 33/1          | 45/17 90/25 90/25 91/7           | <b>engages</b> [1] 237/14        |
| <b>ELISSA</b> [1] 2/17            | 91/7 91/12 91/12 91/13           | <b>engineer</b> [11] 9/16 47/10  |
| <b>ELLIS</b> [1] 2/20             | 93/12 93/12 94/4 94/4            | 48/20 92/2 107/1 107/12          |
| <b>else</b> [14] 79/2 83/19 89/13 | 95/12 95/12 96/20 103/14         | 114/14 115/25 176/4              |
| 98/23 106/9 111/18 129/18         | 104/10 104/18 106/23             | 195/20 208/10                    |
| 209/1 212/6 229/22                | 107/7 107/8 112/10 112/23        | <b>engineering</b> [5] 8/16 9/22 |
| 233/11 256/9 258/16               | 113/6 113/19 117/25 118/5        | 10/2 97/15 99/3                  |
| 259/13                            | 118/19 119/10 119/20             | <b>engineers</b> [4] 13/11 92/4  |

|          |  |   |
|----------|--|---|
| <b>E</b> | <b>erroneous [24]</b> 20/17 68/6<br>70/2 70/17 75/25 88/9<br>88/9 102/7 103/21 104/7<br>117/22 118/25 138/7 140/8<br>143/4 213/14 222/8 223/11<br>225/10 229/14 230/6<br>231/15 237/22 237/25<br><b>erroneously [4]</b> 68/2<br>166/14 231/1 231/3<br><b>error [1]</b> 33/24<br><b>errors [4]</b> 116/11 116/15<br>207/11 207/18<br><b>especially [2]</b> 107/16 188/1<br><b>essence [7]</b> 26/4 26/15<br>71/2 72/10 152/12 202/14<br>228/25<br><b>essentially [32]</b> 10/20<br>22/12 22/21 26/22 46/17<br>48/7 68/1 113/21 118/11<br>126/2 135/12 145/18<br>146/13 159/22 160/6<br>161/10 164/12 177/5 178/19<br>202/12 208/17 210/23<br>218/10 219/1 219/15 221/2<br>222/15 223/14 230/4<br>231/13 232/7 234/18<br><b>establish [10]</b> 79/13 80/25<br>146/7 197/24 202/15<br>204/4 225/24 226/2<br>226/13 257/1<br><b>established [11]</b> 29/13<br>44/7 51/6 60/3 197/3<br>202/3 202/20 206/1<br>248/14 250/23 261/3<br><b>establishes [1]</b> 251/12<br><b>establishing [2]</b> 152/11<br>202/1<br><b>estimate [3]</b> 71/17 78/12<br>81/21<br><b>et [2]</b> 54/16 80/5<br><b>Ethiopia [7]</b> 63/18 216/2<br>221/13 221/17 221/24 | 228/17 260/21<br><b>Ethiopian [47]</b> 4/6 18/16<br>18/24 62/12 62/14 62/19<br>62/25 63/1 63/5 63/7<br>63/10 63/14 64/8 65/9<br>66/8 78/18 79/11 83/25<br>87/3 97/20 171/4 172/11<br>183/7 188/21 189/21<br>190/20 191/3 193/23<br>199/10 200/10 220/12<br>221/21 225/4 225/7 225/8<br>225/12 225/16 225/18<br>226/4 227/20 229/9<br>239/18 240/3 245/22<br>248/24 255/13 257/18<br><b>Ethiopians [2]</b> 246/17<br>248/23<br><b>European [3]</b> 51/15 58/3<br>58/4<br><b>Europeans [1]</b> 54/16<br><b>evaluate [4]</b> 45/2 46/3<br>76/15 175/24<br><b>evaluated [2]</b> 35/1 176/12<br><b>evaluating [3]</b> 181/7<br>255/10 255/12<br><b>evaluation [8]</b> 34/13 34/18<br>34/19 40/13 92/14 106/25<br>127/3 149/16<br><b>evaluations [1]</b> 176/18<br><b>even [39]</b> 22/22 26/14<br>38/25 44/16 62/3 69/18<br>83/20 84/20 85/4 85/10<br>95/21 102/22 103/10<br>108/13 113/20 120/7<br>173/24 192/11 215/22<br>221/9 221/16 221/16<br>221/17 221/23 222/3<br>227/6 227/6 227/24<br>228/5 228/10 228/14<br>228/18 229/25 232/25<br>234/14 245/10 248/7<br>248/19 258/1 |
|----------|--|---|

**engineers...** [2] 96/12

100/20

**enhance [2]** 169/3 169/23**enhanced [1]** 80/25**enhancement [2]** 190/1

205/7

**enhancements [2]** 190/7

190/7

**enough [12]** 89/19 96/6

96/10 126/17 130/22

130/25 131/3 195/23

202/14 226/7 227/1

247/16

**ensure [1]** 98/15**ensured [1]** 88/19**entered [1]** 52/24**entire [15]** 32/22 33/18

38/18 38/20 76/12 90/19

121/2 126/16 131/16 150/16

159/20 170/13 206/5

217/3 224/8

**entirely [2]** 36/24 204/13**entirety [4]** 25/17 28/10

88/8 91/2

**entitled [4]** 36/7 94/23

202/23 262/6

**entity [1]** 52/8**entry [4]** 9/23 251/5

252/3 253/25

**envelope [18]** 22/24 83/8

88/21 98/16 102/8 102/13

102/15 102/16 102/19

102/21 103/1 103/10 114/20

128/25 164/8 170/3 174/5

188/2

**environment [3]** 184/19

226/25 227/17

**envisioned [1]** 238/9**equation [2]** 74/25 101/4**equipment [1]** 10/7**ERIN [1]** 2/7



|                                   |                                   |                                   |
|-----------------------------------|-----------------------------------|-----------------------------------|
| <b>E</b>                          | 221/4 221/12 221/19 225/6         | 218/3 219/10 219/24               |
| <b>even-ifs</b> [1] 221/16        | 225/11 225/15 226/8               | 234/10 236/22 246/9               |
| <b>evening</b> [1] 251/8          | 226/9 226/21 228/1                | 258/10                            |
| <b>event</b> [10] 13/14 71/21     | 229/12 230/10 233/22              | <b>examples</b> [1] 54/14         |
| 72/8 72/9 74/12 74/17             | 234/10 235/8 235/9                | <b>exceed</b> [1] 24/12           |
| 142/10 240/16 251/14              | 236/13 237/9 238/18               | <b>exceedence</b> [1] 24/12       |
| 251/17                            | 238/18 238/20 238/24              | <b>exceeding</b> [1] 102/11       |
| <b>events</b> [10] 80/6 167/9     | 240/7 240/11 240/17               | <b>excellent</b> [3] 197/21 198/9 |
| 211/18 219/17 220/14              | 241/24 242/1 244/19               | 249/25                            |
| 220/14 242/5 242/5 254/4          | 244/21 245/11 246/2               | <b>except</b> [5] 28/15 54/23     |
| 257/2                             | 246/10 247/1 247/20               | 98/15 133/19 258/22               |
| <b>eventually</b> [4] 20/6 174/10 | 247/21 247/22 248/22              | <b>exception</b> [2] 194/18       |
| 182/3 195/20                      | 249/18 254/19 254/24              | 245/12                            |
| <b>ever</b> [24] 9/1 9/5 9/8 9/11 | 256/4 256/18 257/5 257/6          | <b>excerpt</b> [6] 4/18 4/19      |
| 11/4 11/23 15/2 15/18 22/3        | 257/6 259/4 259/19 260/9          | 33/14 39/12 112/12 112/13         |
| 23/8 27/1 47/1 51/2 51/8          | 261/1                             | <b>excerpts</b> [3] 38/19 51/24   |
| 86/12 86/14 88/22 145/1           | <b>evidentiary</b> [4] 1/13 146/9 | 136/1                             |
| 174/22 184/7 184/11 185/1         | 233/25 235/10                     | <b>excess</b> [1] 24/9            |
| 212/19 221/5                      | <b>exact</b> [5] 138/11 138/15    | <b>excessive</b> [4] 24/13 24/20  |
| <b>every</b> [13] 8/9 26/9 28/25  | 228/4 248/20 254/4                | 68/13 169/18                      |
| 71/23 74/3 75/22 98/3             | <b>exactly</b> [11] 83/11 128/15  | <b>exchange</b> [5] 61/4 155/6    |
| 117/21 159/2 187/17               | 199/13 223/23 224/1               | 155/8 207/23 211/19               |
| 234/21 239/7 245/17               | 224/3 230/18 231/11               | <b>exchanges</b> [1] 154/9        |
| <b>every 737</b> [1] 239/7        | 249/7 251/19 256/17               | <b>exclude</b> [1] 6/20           |
| <b>everybody</b> [2] 27/6 85/13   | <b>exam</b> [2] 14/15 14/18       | <b>excluded</b> [3] 6/8 237/1     |
| <b>everyone</b> [2] 61/17 85/1    | <b>examination</b> [24] 3/5 3/6   | 237/6                             |
| <b>everything</b> [11] 73/17      | 3/7 3/8 6/15 7/6 36/19            | <b>excludes</b> [1] 38/22         |
| 74/18 81/16 83/19 141/8           | 38/22 39/3 85/17 122/9            | <b>excuse</b> [5] 6/6 167/11      |
| 240/5 243/7 255/2                 | 144/15 151/25 152/16              | 205/4 207/14 212/7                |
| 257/20 258/8 260/3                | 153/3 157/6 171/14 179/7          | <b>excused</b> [1] 191/15         |
| <b>evidence</b> [89] 8/6 17/5     | 185/21 189/8 195/12 219/11        | <b>exercise</b> [2] 242/6 242/7   |
| 17/6 18/14 32/9 37/16             | 219/12 247/16                     | <b>exerting</b> [1] 24/10         |
| 39/5 41/8 53/6 59/3 59/6          | <b>examine</b> [1] 235/22         | <b>exhibit</b> [77] 4/4 4/5 4/6   |
| 59/24 147/21 155/16               | <b>examined</b> [3] 35/14 35/24   | 4/7 4/8 4/9 4/10 4/11 4/12        |
| 199/18 205/19 208/1               | 194/10                            | 4/13 4/16 4/17 4/18 4/19          |
| 208/23 209/4 209/11               | <b>example</b> [29] 7/1 12/22     | 4/20 7/16 7/20 8/3 8/6            |
| 210/18 212/4 212/5 212/18         | 14/5 23/15 25/18 52/3             | 18/14 31/16 31/17 32/7            |
| 214/1 214/12 214/16 215/13        | 66/12 206/9 206/12                | 32/9 33/8 33/9 33/12              |
| 215/18 215/24 216/7               | 206/19 206/23 212/8               | 38/8 38/13 38/15 39/5             |
| 217/22 218/5 218/12               | 212/13 213/12 213/24              | 39/10 39/17 39/20 41/2            |
| 218/19 218/20 219/20              | 214/10 214/18 214/19              | 41/8 52/22 52/23 53/6             |
| 220/6 220/20 220/24               | 214/19 217/3 217/4 217/10         | 53/7 53/14 55/17 55/18            |

|  |  |  |
|--|--|--|
| <b>E</b>   | <b>existing [4]</b> 9/20 163/14<br>239/5 239/12  | 92/9 96/10 146/21 147/24<br>148/1 148/10 157/6 176/3   |
| <b>exhibit... [34]</b> 57/11 57/11<br>57/12 59/3 59/6 59/24<br>60/16 60/18 86/23 110/12<br>132/23 133/3 136/24<br>145/6 145/7 156/2 156/4<br>156/5 156/7 156/9 156/12<br>165/3 165/4 165/8 165/10<br>168/24 173/19 188/13<br>201/4 201/4 254/23<br>254/23 255/8 255/15 | <b>exists [6]</b> 193/10 232/22<br>238/13 253/12 254/8<br>254/8<br><b>exonerates [1]</b> 108/1<br><b>expand [1]</b> 125/11<br><b>expanded [31]</b> 20/24 21/1<br>25/5 25/10 25/13 25/23<br>28/20 32/19 44/23 75/14<br>75/15 88/2 88/6 91/19<br>92/20 94/11 98/2 102/8<br>105/6 120/22 126/20<br>128/19 129/19 130/4 134/9<br>171/24 172/12 186/3<br>186/15 208/21 209/14<br><b>expanding [1]</b> 135/12<br><b>expands [1]</b> 229/3<br><b>expansion [31]</b> 25/20 26/3<br>40/7 64/1 64/13 76/9 93/2<br>93/6 93/20 94/2 94/25<br>97/14 97/16 97/17 97/22<br>98/17 105/3 106/8 114/5<br>125/20 134/14 135/4<br>208/8 208/15 209/17<br>209/19 209/20 210/16<br>212/17 212/20 221/9<br><b>expect [4]</b> 22/3 23/8<br>77/22 128/2<br><b>expectation [2]</b> 78/6<br>171/11<br><b>expected [9]</b> 27/1 47/9<br>76/16 78/10 84/25 99/16<br>134/6 206/19 253/9<br><b>expecting [3]</b> 77/14 77/21<br>174/6<br><b>experience [44]</b> 8/20 8/25<br>9/15 16/15 20/2 20/4<br>28/13 43/9 46/25 47/9<br>47/12 48/14 48/15 51/1<br>58/19 64/18 65/8 75/18<br>77/8 85/4 85/12 88/22 | 184/20 186/23 195/19<br>195/21 195/23 198/18<br>224/4 228/3 228/12<br>240/21 241/17 241/17<br>249/6 253/8<br><b>experienced [16]</b> 27/1<br>117/11 119/21 123/9 140/8<br>141/8 152/7 222/8 222/25<br>223/11 223/13 223/15<br>223/16 228/3 228/4<br>247/18<br><b>experiencing [2]</b> 142/6<br>143/3<br><b>experiential [1]</b> 216/24<br><b>experimental [1]</b> 114/24<br><b>expert [51]</b> 4/4 4/16 6/12<br>7/11 7/25 13/13 13/19<br>15/11 15/18 15/19 16/4<br>16/5 16/22 17/11 19/23<br>32/11 37/20 65/2 66/11<br>66/22 67/8 75/8 75/10<br>81/3 125/2 136/1 144/22<br>184/6 184/8 196/8 199/16<br>214/9 216/15 216/18 217/2<br>217/16 218/10 218/14<br>219/2 219/5 219/24<br>235/13 235/15 235/16<br>235/23 242/19 247/10<br>248/10 249/5 249/7<br>251/18<br><b>expert's [1]</b> 216/17<br><b>expertise [7]</b> 10/5 13/15<br>20/8 150/7 150/25 151/2<br>250/8<br><b>experts [26]</b> 6/11 133/18<br>216/22 216/25 235/17<br>236/2 236/6 236/14<br>236/15 237/1 237/2 237/5<br>240/21 244/20 246/14<br>246/15 247/25 249/15 |
| <b>Exhibit 11 [4]</b> 7/16 8/3<br>86/23 145/7  |  |  |
| <b>Exhibit 12 [4]</b> 31/16 32/7<br>38/8 38/13   |  |  |
| <b>Exhibit 13 [3]</b> 33/8 33/12<br>38/15  |  |  |
| <b>Exhibit 14 [4]</b> 39/20 41/2<br>156/7 156/12   |  |  |
| <b>Exhibit 15 [2]</b> 57/11 59/3   |  |  |
| <b>Exhibit 2 [3]</b> 59/24<br>136/24 165/10  |  |  |
| <b>Exhibit 4 [5]</b> 18/14 60/16<br>60/18 165/4 165/8  |  |  |
| <b>Exhibit 5 [3]</b> 52/22 55/18<br>201/4  |  |  |
| <b>Exhibit 6 [4]</b> 52/23 53/6<br>53/7 53/14  |  |  |
| <b>Exhibit 7 [8]</b> 132/23 133/3<br>173/19 188/13 254/23<br>254/23 255/8 255/15   |  |  |
| <b>exhibits [22]</b> 4/3 4/15<br>17/14 52/23 110/16 110/17<br>110/23 111/2 111/11 111/16<br>148/17 148/18 148/22<br>149/1 149/12 150/16<br>153/25 154/1 181/3 181/12<br>238/22 245/6   |  |  |
| <b>exist [1]</b> 251/11  |  |  |
| <b>existed [1]</b> 247/11  |  |  |
| <b>existence [4]</b> 168/7 208/8<br>225/20 254/3   |  |  |

|   |  |  |
|---|--|--|
| <p><b>E</b></p> <p><b>experts...</b> [8] 249/21<br/>250/7 250/16 256/16<br/>258/21 258/25 259/8<br/>261/2</p> <p><b>explain</b> [8] 9/14 23/5 26/1<br/>89/3 98/21 176/3 231/18<br/>249/25</p> <p><b>explained</b> [5] 76/6 166/5<br/>210/9 212/19 230/9</p> <p><b>explaining</b> [1] 251/25</p> <p><b>explanation</b> [1] 127/20</p> <p><b>explore</b> [1] 82/18</p> <p><b>explored</b> [1] 151/1</p> <p><b>exploring</b> [1] 128/1</p> <p><b>exponential</b> [3] 82/21<br/>135/6 135/9</p> <p><b>exponentially</b> [1] 42/3</p> <p><b>exposed</b> [1] 252/16</p> <p><b>exposure</b> [1] 115/6</p> <p><b>expounding</b> [1] 132/4</p> <p><b>extended</b> [1] 12/2</p> <p><b>extensive</b> [5] 14/6 66/9<br/>157/5 194/19 243/16</p> <p><b>extensively</b> [2] 15/22<br/>251/5</p> <p><b>extent</b> [6] 37/8 37/10<br/>47/5 204/18 214/9 224/9</p> <p><b>extenuating</b> [1] 141/3</p> <p><b>extremely</b> [4] 25/25 70/25<br/>85/12 194/21</p> <p><b>eye</b> [1] 210/17</p> | <p>28/3 28/20 28/21 29/17<br/>30/1 30/12 30/13 31/2<br/>31/10 32/3 32/12 32/18<br/>32/21 33/19 34/1 35/14<br/>35/25 36/11 41/22 41/23<br/>42/1 42/17 42/18 42/22<br/>43/3 43/16 43/22 44/24<br/>45/2 45/6 45/22 46/8<br/>46/20 47/6 47/13 48/2<br/>49/9 49/9 49/17 49/19<br/>50/5 50/22 52/4 54/15<br/>54/22 54/23 56/7 58/6<br/>58/8 58/21 64/1 64/22<br/>75/13 75/16 76/9 76/14<br/>87/23 91/5 95/18 106/4<br/>107/18 123/9 123/12 127/8<br/>127/13 129/9 132/14<br/>132/24 133/17 133/20<br/>134/3 150/7 150/7 151/13<br/>151/15 161/4 161/19 164/7<br/>164/17 168/18 171/22<br/>171/23 172/16 173/21<br/>174/22 175/1 175/5 175/7<br/>175/11 175/14 176/8 176/11<br/>176/12 176/19 176/20<br/>177/7 177/8 177/13 177/25<br/>178/3 184/16 184/21<br/>184/22 186/3 186/6 186/12<br/>188/20 188/24 189/7<br/>189/18 189/25 190/15<br/>191/2 191/3 194/21 195/4<br/>195/8 195/13 195/23 198/3<br/>198/8 198/14 198/18<br/>198/21 198/25 199/7<br/>199/23 200/4 200/4<br/>200/14 200/20 200/24<br/>201/6 209/20 209/21<br/>226/22 227/21 227/24<br/>228/14 229/3 229/3<br/>237/23 239/9 239/21<br/>239/24 240/2 240/5<br/>240/9 240/10 240/17</p> | <p>241/1 249/14 253/5<br/>253/14 254/16 254/25<br/>255/2 255/4 255/7 255/9<br/>255/12 255/14 257/20<br/>258/7 259/20 259/25<br/>260/3 260/6 260/14<br/>260/22</p> <p><b>FAA AEG</b> [5] 35/14 41/22<br/>52/4 198/8 260/3</p> <p><b>FAA AEG's</b> [1] 42/22</p> <p><b>FAA's</b> [9] 31/22 51/7 99/4<br/>163/25 180/21 225/13<br/>254/7 260/18 260/20</p> <p><b>FAA/DAC</b> [1] 10/13</p> <p><b>FAA/TCCA's</b> [1] 58/6</p> <p><b>fabricated</b> [1] 155/8</p> <p><b>face</b> [7] 36/18 53/22<br/>53/22 54/9 54/9 54/13<br/>247/24</p> <p><b>faced</b> [1] 97/20</p> <p><b>facets</b> [3] 46/3 97/23<br/>135/12</p> <p><b>facing</b> [2] 69/4 83/19</p> <p><b>fact</b> [85] 11/16 23/18 28/1<br/>28/8 28/16 28/18 34/12<br/>43/22 43/25 44/4 47/25<br/>55/5 63/24 69/18 70/13<br/>73/22 83/11 89/5 89/12<br/>91/25 93/22 94/22 94/23<br/>97/4 98/7 98/10 99/2<br/>99/5 104/5 104/6 108/23<br/>114/4 116/13 120/11 126/22<br/>127/16 128/15 131/7 133/9<br/>138/10 139/1 143/19 146/15<br/>146/17 155/12 155/15 161/8<br/>162/2 163/4 163/19 164/7<br/>164/21 166/16 173/8 174/4<br/>178/3 179/15 180/2 181/2<br/>187/11 187/19 193/7<br/>200/15 208/5 208/5 212/9<br/>212/10 219/20 222/23<br/>227/6 235/19 235/24</p> |
| <p><b>F</b></p> <p><b>F.3d</b> [1] 205/5</p> <p><b>F.610</b> [1] 205/15</p> <p><b>F.Supp.2d</b> [1] 205/15</p> <p><b>FAA</b> [190] 4/10 4/11 4/12<br/>4/17 10/4 10/8 10/13 14/17<br/>16/6 16/10 19/20 23/12<br/>25/20 25/23 26/3 27/3<br/>27/4 27/8 27/11 27/16</p>   |  |  |

|  |   |   |
|--|---|---|
| <b>F</b>   | <b>factually [3]</b> 133/21 151/12 169/78   | <b>families' [39]</b> 3/3 4/3 4/15 77/15 77/20 87/8 18/14 31/16   |
| <b>fact...</b> [13] 235/25 237/8 238/7 240/19 241/12 244/18 245/10 246/23 250/12 253/11 256/14 257/16 258/23   | <b>factuals [1]</b> 192/17  | 31/17 32/7 32/9 33/7 33/9   |
| <b>factor [12]</b> 24/8 24/11 25/16 88/6 88/7 96/17 101/13 102/10 108/10 136/4 136/9 170/10  | <b>fail [2]</b> 96/15 162/7   | 33/12 38/8 39/5 39/17   |
| <b>factored [1]</b> 77/11  | <b>fail-safes [1]</b> 96/15   | 39/20 41/2 41/8 52/22   |
| <b>factors [8]</b> 78/19 142/25 143/3 143/17 168/16 169/5 169/25 216/10  | <b>failed [3]</b> 122/16 163/1 168/13   | 52/23 53/6 53/6 53/14   |
| <b>facts [76]</b> 10/21 18/5 18/9 20/22 23/11 23/14 25/9 25/19 27/25 28/15 30/22 36/9 44/11 44/22 59/13 75/9 79/16 90/21 90/23 91/11 92/17 93/1 93/6 93/9 93/11 93/17 93/19 94/3 95/11 96/19 97/10 97/13 97/22 98/23 99/11 118/18 119/8 121/23 122/5 122/15 122/17 122/25 124/2 124/3 130/21 131/2 137/5 156/23 171/14 171/21 175/22 177/13 177/20 179/9 180/6 185/25 186/8 191/24 205/21 205/25 206/1 207/20 209/9 212/5 226/12 226/14 234/2 234/13 235/9 235/25 239/1 240/11 240/14 244/2 244/5 257/25 | <b>failing [1]</b> 73/5   | 55/18 57/11 57/12 59/3  |
| <b>factual [21]</b> 120/23 169/20 169/21 171/16 197/3 205/22 206/2 206/7 206/14 206/19 207/1 208/3 208/6 208/9 208/18 208/20 209/14 209/24 210/8 210/15 210/20   | <b>fails [1]</b> 105/8  | 59/6 59/24 60/16 60/18  |
|  | <b>failure [19]</b> 26/11 26/12 46/4 69/17 69/20 70/14 74/10 75/6 101/14 127/3 127/6 133/12 175/19 175/20 176/6 180/15 227/2 229/15 250/14            | 65/2 132/23 133/3 245/5 254/23 254/23   |
|  | <b>failures [5]</b> 26/25 29/7 30/25 173/4 228/6  | <b>family [1]</b> 5/12  |
|  | <b>fair [21]</b> 20/15 25/3 25/4 76/8 76/20 117/9 128/2 148/15 151/4 152/21 155/13 167/23 176/15 182/22 184/19 245/2 247/16 252/1 252/6 252/13 253/16 | <b>far [10]</b> 13/20 13/22 41/21 64/3 82/17 106/11 123/22 123/23 135/9 225/5   |
|  | <b>fairly [1]</b> 14/6  | <b>far-reaching [1]</b> 135/9   |
|  | <b>fairness [1]</b> 114/13  | <b>fashion [2]</b> 35/15 219/22   |
|  | <b>fall [3]</b> 42/14 71/12 202/24  | <b>fatal [4]</b> 46/11 46/12 46/18 133/12   |
|  | <b>fallen [1]</b> 197/15  | <b>fate [1]</b> 59/16   |
|  | <b>falling [1]</b> 197/11   | <b>father [1]</b> 5/24  |
|  | <b>falls [2]</b> 197/10 203/15  | <b>fault [3]</b> 125/16 127/2 176/6   |
|  | <b>false [5]</b> 28/5 87/13 133/10 210/12 210/22  | <b>faulty [5]</b> 70/12 102/10 102/12 102/23 103/9  |
|  | <b>familiar [17]</b> 9/23 18/4 18/7 19/24 20/25 23/14 23/21 27/7 29/1 51/22 51/23 59/11 63/11 116/12 142/24 167/22 201/25                             | <b>favor [1]</b> 244/24   |
|  | <b>familiarize [1]</b> 14/7   | <b>FCOM [18]</b> 128/14 161/24 161/25 162/4 164/2 164/4 164/12 164/14 164/16 165/7 165/12 165/15 165/17 165/23 166/3 167/24 168/3 169/8 |
|  | <b>families [7]</b> 5/8 8/3 42/17 109/24 201/23 202/21 203/9  | <b>FCRR [2]</b> 262/4 262/17  |
|  |   | <b>feared [1]</b> 260/5   |
|  |   | <b>fearful [1]</b> 245/8  |
|  |   | <b>feature [5]</b> 90/5 97/4 102/4 117/20 202/5   |
|  |   | <b>features [2]</b> 101/8 101/18  |
|  |   | <b>federal [1]</b> 202/22   |
|  |   | <b>feed [2]</b> 102/9 231/2   |
|  |   | <b>feedback [1]</b> 23/2  |
|  |   | <b>feel [5]</b> 73/2 116/4 118/9 220/6 249/10   |



|                                   |                                  |                                  |
|-----------------------------------|----------------------------------|----------------------------------|
| <b>F</b>                          | 154/14 232/21 248/15             | 246/24 256/12 257/13             |
| <b>feeling</b> [2] 70/9 230/17    | 250/10 250/20 251/13             | <b>first-class</b> [1] 84/18     |
| <b>feels</b> [4] 23/1 23/2 74/18  | <b>finder</b> [2] 235/25 250/12  | <b>first-time</b> [1] 168/6      |
| 109/17                            | <b>finding</b> [8] 58/6 58/21    | <b>Fisher</b> [8] 204/7 204/13   |
| <b>fees</b> [1] 262/12            | 61/3 62/5 63/11 214/17           | 205/4 205/11 252/2 252/2         |
| <b>feet</b> [4] 132/5 186/25      | 217/22 218/13                    | 252/8 253/23                     |
| 187/21 187/22                     | <b>findings</b> [4] 58/8 58/16   | <b>Fisher 1</b> [1] 253/23       |
| <b>fellow</b> [1] 94/17           | 220/4 220/5                      | <b>fit</b> [1] 197/5             |
| <b>few</b> [8] 87/9 131/17        | <b>fine</b> [5] 94/19 133/6      | <b>fits</b> [1] 163/7            |
| 149/20 185/23 192/6               | 158/15 235/20 235/20             | <b>five</b> [27] 19/7 34/5 63/13 |
| 198/24 231/25 256/7               | <b>finish</b> [3] 79/6 207/14    | 81/22 82/15 89/8 89/15           |
| <b>field</b> [4] 73/14 116/2      | 213/4                            | 89/22 90/5 100/10 100/13         |
| 170/18 235/18                     | <b>finished</b> [3] 41/20 80/2   | 139/16 163/12 163/22             |
| <b>Fifth</b> [11] 202/9 205/3     | 247/17                           | 164/20 165/18 166/16             |
| 205/5 205/8 251/9 251/12          | <b>fire</b> [12] 23/20 23/22     | 167/4 176/25 187/18              |
| 251/24 252/6 252/8                | 24/2 26/13 83/7 83/9             | 191/18 199/6 243/15              |
| 253/20 254/1                      | 88/19 98/13 98/15 102/13         | 244/14 255/18 257/21             |
| <b>fight</b> [2] 69/23 96/8       | 103/3 186/1                      | 260/17                           |
| <b>fighting</b> [2] 201/18 201/21 | <b>fired</b> [4] 102/25 128/25   | <b>five-degree</b> [1] 139/16    |
| <b>figure</b> [11] 61/8 89/20     | 171/10 174/4                     | <b>five-minute</b> [1] 243/15    |
| 188/1 199/21 247/4                | <b>fires</b> [5] 69/3 69/4 71/22 | <b>five-month</b> [1] 257/21     |
| 257/22 257/22 259/25              | 143/12 173/9                     | <b>five-second</b> [1] 164/20    |
| 260/5 260/15 260/23               | <b>firing</b> [15] 25/2 68/16    | <b>fix</b> [2] 258/13 260/16     |
| <b>file</b> [3] 111/10 236/7      | 69/10 70/9 70/9 70/12            | <b>fixed</b> [2] 13/21 212/12    |
| 248/6                             | 71/18 93/21 98/20 188/6          | <b>fixed-wing</b> [1] 13/21      |
| <b>filed</b> [5] 17/22 90/10      | 188/7 188/7 188/7 212/9          | <b>flaps</b> [1] 169/5           |
| 90/17 110/12 121/18               | 229/20                           | <b>flaps-up</b> [1] 169/5        |
| <b>files</b> [4] 109/17 196/9     | <b>firm</b> [2] 53/19 146/14     | <b>flat</b> [1] 22/12            |
| 197/12 256/10                     | <b>first</b> [51] 6/21 6/22 13/3 | <b>flatly</b> [1] 247/23         |
| <b>filled</b> [3] 224/21 224/22   | 13/7 16/5 19/19 35/18            | <b>flaws</b> [1] 228/6           |
| 232/3                             | 53/10 53/18 67/11 69/4           | <b>fleet</b> [9] 10/20 11/15     |
| <b>filtered</b> [1] 64/20         | 73/11 74/5 84/18 89/10           | 138/14 157/12 167/13             |
| <b>final</b> [7] 4/7 18/11 28/3   | 89/17 102/9 103/20               | 167/25 170/13 172/21             |
| 165/9 196/18 204/21               | 108/24 127/13 127/17             | 241/10                           |
| 205/10                            | 143/12 147/6 151/24              | <b>flew</b> [3] 12/5 146/17      |
| <b>finally</b> [2] 205/13 258/5   | 157/20 161/23 165/13             | 157/25                           |
| <b>financial</b> [2] 42/8 43/15   | 168/5 168/6 169/11 171/24        | <b>flier</b> [1] 84/22           |
| <b>financially</b> [1] 42/2       | 193/1 193/16 193/23 198/3        | <b>flies</b> [1] 249/6           |
| <b>find</b> [22] 18/19 19/2 37/5  | 198/6 200/16 204/6 209/3         | <b>flight</b> [178] 9/11 9/18    |
| 44/15 60/7 60/11 62/25            | 210/13 210/14 211/5              | 11/16 12/21 12/22 14/9           |
| 63/4 63/5 63/21 71/1 93/1         | 224/13 232/15 232/25             | 14/12 14/18 14/24 15/1           |
| 143/20 146/2 150/2 150/18         | 237/13 243/8 243/18              | 15/2 16/8 16/15 16/16            |

|   |   |   |
|---|---|---|
| <p><b>F</b><br/> <b>flight...</b> [164] 19/22 21/9<br/> 22/1 22/1 22/4 22/16<br/> 22/23 23/2 26/10 27/20<br/> 27/22 29/7 30/6 30/9<br/> 31/5 31/11 32/3 35/5 38/1<br/> 40/12 41/25 42/4 43/4<br/> 43/19 43/23 44/8 44/13<br/> 47/23 57/3 59/12 59/14<br/> 59/17 60/8 60/9 61/14<br/> 62/14 63/1 65/9 65/9<br/> 66/18 67/12 67/23 67/23<br/> 71/25 72/3 73/25 74/22<br/> 75/2 75/3 75/6 76/4<br/> 76/21 76/22 77/3 77/17<br/> 82/6 83/2 83/5 83/25<br/> 84/8 84/13 84/14 87/1<br/> 87/3 87/4 88/11 88/20<br/> 88/21 107/13 114/17 114/20<br/> 115/17 115/20 116/7 116/10<br/> 121/8 123/8 127/18 135/13<br/> 137/5 138/4 138/6 138/7<br/> 139/3 140/2 140/7 140/8<br/> 140/11 140/12 140/21<br/> 140/23 141/1 141/7 141/11<br/> 147/25 159/18 160/4 164/4<br/> 169/5 171/22 174/9 174/9<br/> 182/3 186/13 190/2 190/10<br/> 190/11 191/4 192/10 192/15<br/> 192/15 207/8 207/9<br/> 207/10 207/18 207/21<br/> 212/10 212/12 213/13<br/> 213/19 213/19 213/20<br/> 219/12 220/12 220/13<br/> 221/11 221/20 221/21<br/> 222/5 222/5 222/5 222/7<br/> 222/9 222/12 222/20<br/> 223/4 223/7 223/10<br/> 223/16 223/24 224/2<br/> 224/10 224/11 225/1<br/> 225/16 225/19 227/7<br/> 227/9 228/14 230/18</p> | <p>230/20 236/16 237/4<br/> 237/10 239/4 239/11<br/> 241/12 254/16 255/11<br/> 255/13 257/17 257/18<br/> 259/9 259/22<br/> <b>flight-tested</b> [1] 47/23<br/> <b>flights</b> [15] 23/9 66/23<br/> 81/1 82/5 82/20 84/6<br/> 87/16 193/22 194/2 194/4<br/> 223/20 225/2 225/5<br/> 254/11 254/12<br/> <b>flightworthiness</b> [1]<br/> 209/21<br/> <b>flip</b> [9] 60/20 142/17<br/> 168/20 223/25 224/25<br/> 228/25 229/5 229/10<br/> 232/9<br/> <b>flipped</b> [2] 141/23 142/7<br/> <b>Floor</b> [2] 2/8 2/11<br/> <b>flow</b> [1] 241/2<br/> <b>flown</b> [3] 84/22 158/14<br/> 173/5<br/> <b>fly</b> [19] 11/10 11/11 11/25<br/> 12/1 14/19 34/1 42/9 54/7<br/> 61/6 70/3 71/6 74/4 75/22<br/> 76/16 103/6 140/1 140/2<br/> 170/11 232/11<br/> <b>flying</b> [16] 12/25 13/1 13/7<br/> 42/7 56/10 115/5 126/2<br/> 157/9 158/2 158/12 167/8<br/> 170/6 170/7 173/6 188/3<br/> 192/25<br/> <b>focus</b> [3] 37/10 59/9<br/> 205/23<br/> <b>focused</b> [2] 153/14 229/19<br/> <b>follow</b> [19] 46/20 47/6<br/> 47/12 47/15 48/12 49/11<br/> 49/14 49/21 50/5 50/22<br/> 50/24 101/21 120/24 128/8<br/> 164/16 194/21 195/2<br/> 224/24 236/10<br/> <b>followed</b> [12] 16/11 51/3</p> | <p>51/6 108/23 120/24 128/16<br/> 149/9 180/21 180/24<br/> 243/2 246/14 253/11<br/> <b>following</b> [6] 49/8 51/3<br/> 137/17 137/17 171/5 171/21<br/> <b>follows</b> [2] 165/15 233/23<br/> <b>foot</b> [2] 114/16 175/16<br/> <b>footnotes</b> [2] 214/12<br/> 214/13<br/> <b>force</b> [2] 22/20 126/19<br/> <b>forced</b> [1] 126/16<br/> <b>forces</b> [6] 72/1 72/6 74/21<br/> 74/23 160/1 161/9<br/> <b>foregoing</b> [2] 262/5 262/6<br/> <b>foreign</b> [59] 16/11 46/20<br/> 46/21 47/1 47/2 47/5 47/6<br/> 47/12 47/15 48/12 48/21<br/> 49/7 49/20 49/21 49/25<br/> 49/25 50/16 50/17 50/21<br/> 50/21 50/23 51/2 51/9<br/> 52/8 52/16 52/18 54/17<br/> 56/19 56/25 62/1 64/13<br/> 64/19 65/1 170/20 179/9<br/> 179/14 179/17 179/20<br/> 180/1 180/3 180/21 180/24<br/> 181/3 181/14 181/23 182/1<br/> 182/3 185/2 194/11 194/20<br/> 199/9 215/14 215/20<br/> 217/10 221/12 243/2<br/> 243/3 246/19 247/14<br/> <b>Forensic</b> [2] 13/10 86/1<br/> <b>foresaw</b> [4] 240/3 240/8<br/> 240/12 240/14<br/> <b>foresawn</b> [1] 237/19<br/> <b>foresee</b> [3] 240/6 240/9<br/> 240/10<br/> <b>foreseeability</b> [21] 202/2<br/> 202/6 202/10 202/13<br/> 202/15 204/14 204/15<br/> 205/11 210/2 210/2 212/2<br/> 212/14 212/23 213/8<br/> 251/24 252/1 252/20</p> |
|---|---|---|

|                                  |                                   |                                   |
|----------------------------------|-----------------------------------|-----------------------------------|
| <b>F</b>                         | 220/21 221/4 224/17               | <b>frame [7]</b> 31/9 93/14       |
| <b>foreseeability...</b> [4]     | 226/9 230/11 231/5                | 93/16 93/24 104/11 119/14         |
| 253/20 254/1 254/3               | 231/23 243/22 244/4               | 233/19                            |
| 260/10                           | <b>Forkner's [8]</b> 4/18 36/7    | <b>frames [1]</b> 233/23          |
| <b>foreseeable [10]</b> 46/8     | 36/19 42/10 91/17 96/9            | <b>framework [1]</b> 195/22       |
| 46/15 195/3 195/6 195/7          | 225/24 226/3                      | <b>frankly [4]</b> 194/3 194/7    |
| 195/10 202/18 213/8              | <b>form [5]</b> 40/24 49/15       | 194/22 208/6                      |
| 213/25 253/22                    | 149/3 225/12 235/21               | <b>fraud [2]</b> 1/20 206/9       |
| <b>foreseeably [2]</b> 252/21    | <b>formally [1]</b> 111/10        | <b>free [2]</b> 109/17 118/9      |
| 253/6                            | <b>format [1]</b> 262/12          | <b>friends [1]</b> 170/7          |
| <b>Forkner [122]</b> 19/12 19/14 | <b>formed [1]</b> 216/19          | <b>friggin' [1]</b> 61/6          |
| 33/15 36/5 36/13 39/24           | <b>former [1]</b> 42/17           | <b>front [10]</b> 13/1 24/16      |
| 40/10 40/21 44/6 44/25           | <b>forms [1]</b> 210/1            | 33/18 55/17 145/7 172/1           |
| 45/15 45/17 56/19 57/1           | <b>formula [2]</b> 216/22 216/23  | 173/17 181/13 191/8 243/18        |
| 57/5 61/5 61/13 61/25            | <b>formulated [1]</b> 251/19      | <b>FSB [4]</b> 28/3 28/5 45/4     |
| 91/20 92/3 92/7 93/19            | <b>FORT [6]</b> 1/3 1/7 2/24      | 58/15                             |
| 94/16 94/24 96/20 98/24          | 220/7 262/19 262/20               | <b>FSB's [1]</b> 184/12           |
| 103/13 104/1 104/10 104/18       | <b>forth [10]</b> 22/13 36/6      | <b>fulfill [1]</b> 10/10          |
| 104/22 105/23 106/7              | 111/21 196/9 198/2 203/4          | <b>full [27]</b> 10/25 14/18      |
| 106/10 106/11 106/15             | 206/23 210/12 216/24              | 27/20 27/20 27/22 29/3            |
| 106/16 106/23 107/4              | 243/22                            | 29/7 30/6 30/8 30/9 35/5          |
| 110/10 110/16 110/25 111/3       | <b>forthright [1]</b> 97/1        | 38/1 38/25 42/4 57/3              |
| 112/10 112/21 113/2 113/11       | <b>forums [5]</b> 51/19 51/22     | 127/18 128/2 221/11 227/7         |
| 113/14 113/19 113/25 114/4       | 52/1 52/12 52/16                  | 227/9 228/14 236/16               |
| 115/9 116/22 117/4 117/12        | <b>forward [4]</b> 137/19 146/8   | 237/10 239/4 239/11               |
| 117/25 118/5 118/19 119/9        | 206/16 244/17                     | 241/3 245/3                       |
| 119/15 119/16 120/13             | <b>found [15]</b> 35/10 36/16     | <b>full-flight [19]</b> 14/18     |
| 120/20 121/17 121/18             | 60/16 61/24 76/21 88/1            | 27/20 27/22 29/7 30/6             |
| 121/22 122/2 122/7 122/12        | 100/1 148/18 148/22 150/11        | 30/9 35/5 38/1 42/4 57/3          |
| 122/20 122/21 123/7              | 161/1 163/15 163/17 235/6         | 127/18 221/11 227/7 227/9         |
| 123/11 124/22 124/25             | 242/23                            | 228/14 236/16 237/10              |
| 125/3 126/8 126/8 127/8          | <b>foundation [8]</b> 205/21      | 239/4 239/11                      |
| 129/13 129/17 129/25             | 205/24 205/25 207/4               | <b>full-motion [1]</b> 27/20      |
| 131/11 132/4 132/7 133/24        | 210/1 242/10 242/16               | <b>full-time [1]</b> 10/25        |
| 134/8 134/22 135/20              | 245/21                            | <b>fully [9]</b> 14/18 14/24 20/5 |
| 135/24 143/16 144/1 151/21       | <b>foundational [2]</b> 44/3      | 40/23 96/3 197/17 213/5           |
| 153/11 153/23 155/25             | 44/20                             | 221/9 231/18                      |
| 156/18 156/24 157/3 181/8        | <b>four [11]</b> 19/6 63/13 100/4 | <b>function [13]</b> 29/4 45/2    |
| 186/8 186/11 186/20              | 100/5 135/1 143/21 158/9          | 45/6 45/22 46/2 46/7              |
| 187/14 190/24 191/1 208/3        | 189/6 206/6 219/25                | 163/22 166/5 166/16               |
| 208/7 208/11 208/24              | 257/20                            | 167/17 169/2 169/23 175/4         |
| 212/6 216/11 220/16              | <b>fourth [1]</b> 87/10           | <b>functional [3]</b> 126/22      |

|   |   |  |
|---|---|--|
| <b>F</b><br>functional... [2] 176/5<br>189/10<br>functionality [1] 180/15<br>fundamental [1] 147/23<br>fundamentally [2] 109/21<br>130/16<br>further [8] 55/5 56/23<br>72/5 87/10 185/19 196/3<br>262/8 262/12  | 205/11 206/22 213/17<br>213/21 223/6 227/8 242/7<br>261/8<br>get-go [1] 242/7<br>gets [3] 107/14 122/22<br>124/1<br>getting [13] 76/7 78/15<br>85/21 85/24 86/1 92/3<br>123/20 159/12 161/18<br>183/10 201/16 227/10<br>248/19<br>give [19] 12/11 36/21<br>39/14 39/16 52/18 52/25<br>65/17 66/11 66/22 71/17<br>105/22 145/10 159/10<br>196/19 213/3 214/4 217/7<br>223/13 227/2<br>given [15] 30/12 32/23<br>58/19 61/11 67/7 109/7<br>131/15 168/20 178/8<br>180/17 201/18 202/9 215/4<br>226/8 247/25<br>gives [1] 195/22<br>giving [4] 35/7 193/11<br>217/18 222/15<br>glasses [1] 33/25<br>glean [3] 48/25 51/16<br>174/8<br>globe [1] 203/9<br>gmail.com [1] 262/21<br>go [66] 7/5 8/9 14/14<br>14/20 14/25 17/23 29/7<br>29/21 37/24 43/5 45/18<br>53/22 54/7 54/9 58/14<br>63/12 74/23 76/16 81/10<br>82/3 82/7 82/9 88/24<br>92/6 95/18 96/6 103/2<br>106/3 110/1 116/16 117/15<br>117/16 119/25 126/2 131/18<br>144/7 146/8 150/21 153/25<br>159/8 162/15 162/21<br>167/13 170/12 170/13 | 177/21 179/5 181/20 185/8<br>190/10 199/7 207/20<br>208/16 211/14 211/25<br>213/8 216/10 216/21 220/1<br>221/16 228/10 230/15<br>232/5 242/7 255/11<br>260/16<br>goes [8] 22/13 48/4 87/10<br>89/23 122/18 212/22<br>252/12 258/11<br>going [93] 6/13 12/4 14/2<br>16/1 16/2 17/15 20/14<br>26/17 28/16 34/7 42/12<br>45/19 52/21 52/25 68/13<br>68/15 69/1 69/13 70/6<br>70/14 71/3 71/9 72/15<br>73/9 73/17 73/18 74/19<br>74/20 74/22 74/24 75/2<br>78/6 78/16 78/17 78/18<br>78/22 80/4 80/24 81/17<br>81/17 84/24 89/19 89/20<br>92/8 92/10 97/21 103/17<br>106/24 113/2 113/10 117/14<br>119/15 121/16 123/21<br>123/22 125/22 130/23<br>132/25 137/22 140/24<br>143/14 157/25 159/15<br>160/3 165/4 176/22 177/4<br>178/11 178/20 180/5<br>182/20 191/5 191/6 196/23<br>200/25 201/3 202/18<br>203/2 216/5 218/12 218/19<br>222/25 228/15 230/23<br>250/20 250/21 251/13<br>251/15 257/23 257/24<br>258/8 260/1 260/23<br>gold [4] 47/14 48/7<br>199/23 239/23<br>gone [7] 30/5 82/7 172/19<br>203/3 228/2 238/10<br>238/13<br>good [12] 7/19 21/12 35/14 |
| <b>G</b><br>G's [3] 24/9 24/9 24/12<br>gain [1] 52/14<br>game [1] 248/17<br>gap [4] 224/21 224/21<br>224/22 232/3<br>gather [1] 175/16<br>gathering [2] 9/18 177/10<br>gave [6] 96/23 96/25<br>156/2 185/10 199/22<br>248/7<br>general [6] 12/20 13/20<br>78/4 254/3 254/7 254/8<br>generalized [1] 30/8<br>generally [9] 13/16 14/3<br>16/22 58/1 59/8 60/3<br>200/3 250/9 250/10<br>generous [1] 202/8<br>genius [1] 254/10<br>gentlemen [1] 255/21<br>genuinely [1] 201/7<br>Germain [1] 157/3<br>Germain's [1] 242/14<br>germane [1] 159/12<br>get [32] 5/7 7/5 11/17<br>14/23 27/21 50/9 66/21<br>71/24 75/9 88/10 89/18<br>89/21 113/2 123/22 126/4<br>126/24 156/23 159/19<br>159/25 160/4 165/5<br>203/18 203/21 204/13 |   |  |



|  |   |   |
|--|---|---|
| <p><b>G</b><br/> <b>good...</b> [9] 66/22 82/14<br/> 103/3 144/13 144/17<br/> 144/18 191/20 196/10<br/> 256/20<br/> <b>goodness</b> [1] 67/3<br/> <b>got</b> [13] 17/18 17/19 21/12<br/> 78/23 157/15 176/15 192/7<br/> 194/7 197/13 199/20<br/> 199/21 215/21 236/12<br/> <b>GOULD</b> [1] 2/23<br/> <b>government</b> [42] 1/7 1/18<br/> 35/12 35/15 38/11 38/12<br/> 79/18 82/11 109/13 110/12<br/> 110/19 132/22 185/24<br/> 196/9 196/23 197/12<br/> 197/17 199/4 200/1 206/4<br/> 214/22 234/20 235/4<br/> 244/8 244/22 245/13<br/> 246/4 246/6 246/12<br/> 246/18 247/5 248/4<br/> 248/11 248/22 249/2<br/> 249/12 249/13 249/15<br/> 255/3 255/17 256/23<br/> 257/6<br/> <b>government's</b> [4] 198/23<br/> 203/24 210/7 256/10<br/> <b>grab</b> [1] 99/25<br/> <b>grammar</b> [1] 215/23<br/> <b>granting</b> [2] 221/9 227/6<br/> <b>grasp</b> [1] 159/22<br/> <b>grave</b> [1] 33/24<br/> <b>gravity</b> [1] 24/9<br/> <b>Graziella</b> [1] 6/1<br/> <b>great</b> [5] 17/19 112/19<br/> 130/9 147/19 258/11<br/> <b>greater</b> [2] 98/18 118/14<br/> <b>greatly</b> [2] 83/21 252/25<br/> <b>gremlin</b> [1] 77/16<br/> <b>gross</b> [1] 258/9<br/> <b>grossly</b> [1] 62/2<br/> <b>ground</b> [13] 69/10 71/10</p> | <p>71/20 73/20 75/4 83/10<br/> 83/18 90/1 118/12 132/6<br/> 159/13 187/21 221/3<br/> <b>grounded</b> [1] 127/14<br/> <b>grounding</b> [1] 241/9<br/> <b>grounds</b> [1] 236/6<br/> <b>Group</b> [1] 92/15<br/> <b>grueling</b> [1] 146/17<br/> <b>guess</b> [27] 18/16 26/12<br/> 28/23 39/10 44/11 51/19<br/> 52/5 55/13 63/12 65/25<br/> 76/7 77/2 83/12 86/7<br/> 97/3 155/14 158/11 164/11<br/> 190/19 198/6 200/22<br/> 213/25 228/24 233/8<br/> 248/16 251/1 255/10<br/> <b>guidance</b> [4] 50/5 50/22<br/> 225/13 225/17<br/> <b>guilt</b> [1] 210/23<br/> <b>gun</b> [1] 234/23<br/> <b>Gustavsson</b> [8] 45/1 45/17<br/> 93/19 104/1 114/8 129/25<br/> 186/11 212/6</p> <hr/> <p><b>H</b></p> <p><b>had</b> [168] 11/5 11/19 13/25<br/> 16/5 16/15 17/14 18/17<br/> 19/20 21/15 23/22 28/18<br/> 28/19 28/22 29/23 30/19<br/> 30/23 30/23 32/18 32/21<br/> 34/18 35/12 37/15 38/2<br/> 42/17 45/14 47/1 48/2<br/> 49/2 49/15 50/14 58/21<br/> 60/12 64/12 65/8 70/1<br/> 72/11 72/12 73/22 74/1<br/> 80/2 83/2 83/12 83/16<br/> 83/20 83/25 84/22 85/5<br/> 85/11 87/24 92/7 92/19<br/> 93/20 96/7 96/16 96/16<br/> 96/17 101/3 101/12 101/18<br/> 101/22 101/23 104/24<br/> 105/1 105/6 105/24 107/6<br/> 115/1 116/1 117/20 120/17</p> | <p>120/21 124/17 128/19<br/> 128/25 129/4 129/18<br/> 133/25 134/9 134/21<br/> 134/23 135/6 135/9 136/3<br/> 138/7 139/1 140/18 140/23<br/> 144/9 148/22 156/14<br/> 156/16 157/17 157/19<br/> 157/19 158/14 162/11<br/> 165/25 166/2 168/18 170/7<br/> 171/9 172/12 172/12 172/18<br/> 173/17 174/2 174/5 179/25<br/> 182/4 183/3 186/3 189/7<br/> 189/9 189/12 189/14<br/> 189/16 189/18 190/15<br/> 190/19 193/22 198/1<br/> 198/25 199/8 199/12<br/> 199/12 200/19 200/23<br/> 201/11 201/17 201/18 203/1<br/> 203/6 206/17 207/11<br/> 207/11 208/15 212/16<br/> 213/13 213/14 213/16<br/> 223/8 224/19 228/2 229/2<br/> 229/12 230/15 230/24<br/> 236/23 237/2 237/17<br/> 238/8 238/13 239/9<br/> 240/18 241/15 242/13<br/> 242/15 243/16 244/12<br/> 245/10 247/17 248/1<br/> 249/5 251/18 259/8 260/4<br/> 260/5 260/15<br/> <b>hadn't</b> [2] 158/19 217/2<br/> <b>half</b> [7] 8/23 81/18 157/11<br/> 158/7 203/24 257/12<br/> 257/13<br/> <b>hand</b> [2] 109/7 109/10<br/> <b>handle</b> [3] 13/17 21/13<br/> 46/6<br/> <b>hands</b> [1] 50/9<br/> <b>HANEY</b> [1] 2/20<br/> <b>Hang</b> [5] 134/17 134/17<br/> 140/25 140/25 185/6<br/> <b>happen</b> [7] 53/22 72/4</p> |
|--|---|---|

|                                  |                                  |                                  |
|----------------------------------|----------------------------------|----------------------------------|
| <b>H</b>                         | 218/23 219/20 220/6              | 130/15 147/13 149/19             |
| <b>happen...</b> [5] 163/23      | 220/11 222/7 229/6               | 150/9 187/24 188/1 208/16        |
| 176/7 228/9 240/3 251/17         | 233/18 233/20 238/21             | 247/10 247/15                    |
| <b>happened</b> [28] 10/19 35/21 | 239/22 240/2 242/11              | <b>he's</b> [4] 94/13 125/13     |
| 66/23 72/5 78/5 83/11            | 242/19 242/23 244/5              | 126/6 126/7                      |
| 90/2 121/5 129/4 132/12          | 249/23 249/24 250/12             | <b>head</b> [4] 32/17 32/20      |
| 132/17 151/18 162/11             | 251/9 251/14 251/25              | 33/19 145/5                      |
| 221/20 222/4 223/24              | 252/6 253/11 253/20              | <b>heading</b> [4] 139/10 194/8  |
| 225/5 228/16 230/18              | 254/24 259/10                    | 221/3 222/19                     |
| 230/19 237/2 238/19              | <b>hasn't</b> [5] 111/10 146/15  | <b>heads</b> [1] 11/13           |
| 241/14 242/3 243/21              | 146/16 201/8 235/4               | <b>healthy</b> [1] 103/2         |
| 244/12 253/2 257/15              | <b>HATCH</b> [8] 2/16 2/23       | <b>hear</b> [17] 58/1 101/23     |
| <b>happening</b> [17] 42/15 49/1 | 144/13 144/19 188/24             | 106/21 108/9 138/21 146/5        |
| 68/23 69/17 69/22 70/11          | 191/22 254/15 254/19             | 198/23 200/22 244/7              |
| 71/12 72/10 74/11 80/17          | <b>Hatch</b> .....               | 248/21 248/21 249/2              |
| 83/17 97/1 125/9 193/15          | ..... <b>233</b> [1] 3/13        | 257/8 258/16 258/16              |
| 193/18 231/14 260/7              | <b>Hatch</b> ..... <b>144</b>    | 260/9 262/7                      |
| <b>happens</b> [7] 89/21 89/23   | [1] 3/7                          | <b>heard</b> [34] 7/2 21/24 27/6 |
| 105/8 188/10 229/10              | <b>have</b> [492]                | 27/7 57/24 84/19 190/23          |
| 230/25 251/16                    | <b>haven't</b> [15] 98/22 103/13 | 192/9 193/21 195/13 198/6        |
| <b>happy</b> [5] 56/10 153/25    | 103/25 106/13 114/3              | 199/16 201/14 208/14             |
| 172/9 236/7 236/9                | 117/24 118/18 124/21 131/9       | 209/6 209/8 217/1 217/1          |
| <b>hard</b> [3] 58/16 210/6      | 134/12 135/19 180/17             | 219/11 220/11 222/7              |
| 217/23                           | 184/22 196/24 237/6              | 222/10 222/17 223/2              |
| <b>harm</b> [6] 201/23 202/20    | <b>having</b> [13] 20/9 20/10    | 225/7 230/3 236/2 246/4          |
| 218/1 234/3 253/21 254/5         | 35/23 43/12 64/6 79/5            | 247/4 251/23 254/14              |
| <b>harmed</b> [3] 85/8 235/5     | 173/5 184/18 217/16              | 255/16 256/23 259/5              |
| 253/21                           | 224/22 231/4 231/5               | <b>hearing</b> [22] 1/13 6/23    |
| <b>has</b> [77] 6/21 9/15 12/3   | 236/16                           | 17/15 17/17 32/2 41/15           |
| 13/15 18/5 19/8 19/16 27/6       | <b>hazard</b> [3] 126/21 126/22  | 52/24 53/2 78/23 113/4           |
| 27/7 42/8 43/1 44/13             | 176/5                            | 113/25 146/7 146/9 147/6         |
| 48/17 53/1 53/5 58/5 58/7        | <b>hazards</b> [1] 195/9         | 203/18 206/3 206/25              |
| 59/23 68/10 68/11 69/16          | <b>he</b> [46] 15/22 40/10 40/11 | 209/4 214/2 217/2 233/17         |
| 73/9 75/24 94/10 106/15          | 57/5 57/6 57/7 61/13             | 256/8                            |
| 122/6 132/23 133/3               | 69/14 82/4 92/9 95/1             | <b>hearings</b> [4] 17/3 186/18  |
| 152/25 159/2 161/1 166/23        | 95/17 95/18 98/24 105/23         | 233/25 234/2                     |
| 178/6 184/11 184/15              | 105/25 106/2 106/3 106/4         | <b>hearsay</b> [32] 37/17 38/9   |
| 184/20 185/1 186/18              | 107/6 113/15 115/11 115/13       | 39/1 214/7 214/7 214/8           |
| 197/18 198/18 202/9              | 120/18 122/12 122/15             | 214/16 215/10 215/11 217/7       |
| 202/20 203/3 204/20              | 122/16 125/8 125/9 125/13        | 217/17 218/5 218/9 218/10        |
| 206/11 207/7 207/23              | 125/15 126/10 126/10             | 218/23 219/2 219/4 219/8         |
| 214/1 215/11 216/9 218/11        | 126/10 126/11 126/15 127/9       | 219/22 219/23 220/1              |

**H**  
**hearsay**... [11] 235/11  
 235/11 235/14 235/22  
 244/9 244/15 244/16  
 245/4 245/12 245/17  
 246/1  
**heat** [1] 191/22  
**heavily** [1] 37/11  
**heavy** [1] 125/25  
**heck** [1] 35/25  
**heels** [1] 258/8  
**held** [6] 107/14 209/4  
 214/21 220/20 251/9  
 254/2  
**help** [18] 21/3 21/14 22/7  
 52/18 56/11 67/21 69/6  
 72/24 73/24 116/2 154/23  
 160/17 161/14 163/9 167/21  
 176/8 176/16 194/7  
**helped** [1] 259/12  
**helpful** [5] 109/18 109/19  
 155/19 236/10 241/5  
**her** [39] 13/4 13/8 35/10  
 35/13 36/4 36/16 37/2  
 37/2 37/10 37/12 38/19  
 38/25 39/14 39/16 40/13  
 82/5 105/18 108/9 122/7  
 122/10 122/11 122/18  
 123/18 131/16 131/20  
 151/25 152/1 152/2 152/13  
 152/18 153/10 198/11  
 227/4 242/9 242/13  
 242/16 248/11 248/12  
 258/6  
**here** [102] 5/5 5/7 5/13  
 5/15 6/3 13/13 13/22 15/16  
 16/1 17/3 17/7 17/18 18/11  
 20/21 28/18 33/24 35/7  
 37/3 40/22 42/24 47/11  
 50/10 52/19 55/3 55/7  
 56/6 56/17 58/20 61/2  
 62/8 66/6 70/13 75/8

75/20 76/1 77/22 84/4  
 87/6 89/25 89/25 102/21  
 105/13 106/7 107/10 108/9  
 112/15 118/9 120/2 122/3  
 124/1 124/10 125/19 132/2  
 145/24 153/10 153/21  
 155/11 156/13 165/5 168/8  
 178/20 182/17 183/11  
 183/15 183/19 183/20  
 187/10 192/6 192/8 199/11  
 200/10 202/16 202/21  
 205/22 206/2 206/16  
 209/7 213/4 214/24  
 216/22 219/19 219/23  
 220/24 227/8 227/10  
 228/15 232/22 243/20  
 244/13 246/18 247/9  
 247/9 249/11 249/14  
 253/4 254/20 257/4  
 258/18 258/19 259/9  
 260/10 261/10  
**here's** [2] 250/14 252/8  
**herself** [2] 32/19 44/13  
**hey** [2] 35/24 198/25  
**hidden** [1] 106/5  
**hide** [1] 179/9  
**high** [10] 21/16 21/23  
 21/25 22/7 22/18 52/13  
 102/16 129/8 132/15  
 242/21  
**high-speed** [6] 21/16  
 21/23 21/25 102/16 129/8  
 132/15  
**high-visibility** [1] 52/13  
**higher** [5] 27/16 30/5  
 187/23 226/23 227/2  
**highlight** [5] 8/10 18/1  
 120/11 250/1 251/8  
**highly** [9] 51/4 116/14  
 119/1 248/10 249/6  
 250/20 256/15 258/5  
 261/2

**HILTON** [1] 2/12  
**him** [14] 57/77/2 13/8  
 95/19 96/10 107/8 125/10  
 125/16 128/1 143/23 188/1  
 188/6 191/16 235/4  
**hindsight** [1] 242/6  
**hints** [1] 197/13  
**his** [28] 5/16 5/24 6/1  
 13/4 42/11 42/15 42/20  
 42/23 105/23 105/24  
 126/12 132/4 136/9 150/6  
 150/24 150/25 151/1 151/1  
 151/7 151/18 181/10 187/6  
 191/24 198/19 239/22  
 244/13 254/20 254/20  
**historically** [1] 166/22  
**hit** [1] 166/22  
**hold** [7] 159/23 162/17  
 162/17 181/19 181/19  
 211/17 223/19  
**holding** [1] 53/19  
**holds** [1] 61/21  
**honest** [1] 178/15  
**honestly** [3] 37/3 86/18  
 96/5  
**Honor** [138] 5/6 5/11 6/5  
 6/6 6/8 6/12 7/16 8/2  
 17/20 31/13 32/6 33/5  
 33/23 35/18 37/14 38/7  
 38/17 38/25 39/6 39/13  
 41/1 41/10 41/13 45/8  
 52/21 56/1 59/2 63/20  
 79/4 80/13 80/23 92/21  
 94/7 105/17 107/24 109/8  
 109/12 110/14 116/25  
 121/20 121/23 122/7  
 123/15 125/20 127/22  
 127/24 131/14 132/21  
 142/22 144/5 144/13  
 153/13 155/19 168/19  
 168/23 177/11 177/19  
 178/25 180/5 183/10

|  |  |   |
|--|--|---|
| <b>H</b>   | <b>hours [10]</b> 12/10 12/11<br>12/15 12/15 12/16 12/17<br>14/23 86/4 146/18 259/11   | <b>hundred [2]</b> 59/24 254/12<br><b>hundreds [5]</b> 9/7 15/4<br>50/14 107/12 259/10  |
| <b>Honor...</b> [78] 183/13<br>183/16 185/18 190/22<br>191/10 191/14 195/25 196/1<br>196/2 196/3 196/5 196/7<br>196/12 196/14 196/15<br>196/16 197/7 197/17<br>201/24 202/8 203/3 203/8<br>203/23 204/2 204/7<br>204/12 204/19 205/13<br>206/10 207/13 207/21<br>208/9 208/10 208/13<br>208/19 209/4 210/4 210/6<br>210/19 211/24 212/15<br>213/6 213/11 214/9 215/11<br>217/5 217/14 218/9 220/11<br>222/4 222/16 223/2 226/6<br>226/17 230/3 230/8<br>230/17 233/3 233/10<br>233/12 233/14 233/16<br>236/5 237/13 240/21<br>243/9 243/9 243/12<br>243/14 244/4 244/9<br>245/12 246/1 247/9<br>249/24 251/6 251/21<br>257/9 | <b>house [25]</b> 4/7 10/20 18/12<br>56/3 60/17 60/18 60/20<br>61/3 61/23 61/24 62/5<br>63/12 63/21 68/19 100/18<br>147/23 165/9 244/15<br>244/19 245/6 245/22<br>246/8 258/11 258/14<br>260/12  | <b>hung [1]</b> 155/4<br><b>hydraulic [3]</b> 73/6 116/3<br>167/22<br><b>hypothetical [4]</b> 29/25<br>75/9 143/11 234/19<br><b>Hypothetically [1]</b> 180/8  |
| <b>Honor's [2]</b> 197/20 214/4<br><b>HONORABLE [1]</b> 1/14<br><b>hope [6]</b> 90/7 200/2<br>203/20 227/14 233/18<br>243/14<br><b>hopefully [3]</b> 103/4 186/25<br>191/7<br><b>hopes [1]</b> 69/14<br><b>hoping [2]</b> 81/6 199/3<br><b>horizontal [5]</b> 139/13<br>139/14 141/24 232/9<br>232/11<br><b>hosted [1]</b> 48/23<br><b>hour [9]</b> 26/17 26/21 81/17<br>81/18 86/2 86/7 130/24<br>191/8 247/10  | <b>how [85]</b> 8/21 11/7 12/7<br>12/11 25/12 28/21 29/6<br>34/12 34/17 35/6 40/4<br>40/20 47/25 51/17 52/2<br>55/2 56/16 57/22 57/25<br>61/8 62/7 67/1 67/25<br>69/20 70/1 71/17 73/24<br>74/11 75/18 76/4 77/11<br>81/5 83/21 86/4 90/2<br>90/12 93/13 94/4 95/7<br>96/2 96/11 112/25 113/9<br>115/14 117/5 117/11 120/14<br>122/16 123/12 125/25<br>136/5 136/20 141/21<br>147/24 150/21 151/13<br>155/14 169/14 172/25<br>174/11 174/14 175/24<br>176/12 176/19 183/1 183/5<br>184/22 192/9 198/7 200/11<br>203/2 205/9 208/17<br>212/20 220/5 220/24<br>221/5 221/24 225/9<br>228/19 231/7 251/25<br>258/12 259/16 260/16<br><b>however [6]</b> 58/10 68/4<br>100/25 102/6 178/10<br>229/18<br><b>huge [1]</b> 150/16<br><b>huh [2]</b> 39/15 115/23<br><b>human [3]</b> 142/24 143/3<br>143/17 | <b>I</b><br><b>I'll [5]</b> 33/17 136/16<br>155/22 178/15 188/18<br><b>I'm [111]</b> 8/10 11/9 11/14<br>11/19 12/9 15/22 17/15<br>19/13 21/20 34/7 37/7<br>37/11 38/14 41/20 45/12<br>45/19 46/23 52/21 52/25<br>53/9 55/25 58/11 61/7<br>64/5 65/25 68/24 74/19<br>74/20 74/22 74/24 75/2<br>77/9 78/6 78/16 81/12<br>85/23 88/3 97/3 98/5<br>98/21 100/2 101/17 101/21<br>101/21 103/8 104/11 106/20<br>108/1 108/3 112/5 116/12<br>117/14 118/8 120/10 122/14<br>123/25 124/4 124/9<br>125/22 126/4 129/24<br>130/2 130/18 131/4 131/25<br>133/20 133/23 138/13<br>138/21 148/9 150/17 151/17<br>153/25 155/4 156/11<br>156/24 158/22 159/15<br>163/6 165/6 165/10 167/22<br>170/9 170/10 172/6 172/9<br>178/20 179/19 180/5<br>182/17 182/20 183/10<br>199/3 203/16 209/7<br>211/20 211/23 215/12<br>216/5 218/12 219/7 219/8<br>228/24 229/2 232/20<br>233/8 249/11 254/19 |



|  |   |   |
|--|---|---|
| <p><b>I</b><br/> <b>I'm...</b> [3] 254/20 255/3<br/> 256/8<br/> <b>I've</b> [35] 17/18 21/11 21/12<br/> 22/15 23/17 33/23 51/2<br/> 51/14 51/18 57/24 73/1<br/> 74/3 77/3 78/23 91/16<br/> 99/13 104/17 106/15<br/> 107/25 108/5 109/7 111/22<br/> 112/12 124/9 135/16 135/21<br/> 143/7 150/8 166/5 168/10<br/> 173/18 194/20 201/24<br/> 212/25 224/15<br/> <b>i.e</b> [1] 34/12<br/> <b>IAN</b> [1] 2/23<br/> <b>ICAO</b> [3] 50/25 51/6<br/> 149/6<br/> <b>icing</b> [1] 44/12<br/> <b>idea</b> [6] 63/15 69/21 71/11<br/> 170/8 241/22 260/6<br/> <b>identical</b> [1] 28/14<br/> <b>identification</b> [8] 7/20<br/> 31/16 31/17 33/9 33/12<br/> 39/17 39/20 57/12<br/> <b>identify</b> [1] 234/20<br/> <b>identifying</b> [1] 222/1<br/> <b>Idiots.'</b> [1] 61/8<br/> <b>if</b> [244] 5/11 6/24 7/1 8/10<br/> 10/22 15/21 21/11 21/14<br/> 22/10 22/12 26/12 26/15<br/> 26/17 27/4 28/21 29/4<br/> 29/15 30/19 31/9 33/21<br/> 33/23 34/21 36/2 36/21<br/> 37/24 39/13 42/13 42/20<br/> 46/7 46/13 47/14 49/19<br/> 50/2 52/12 54/14 54/20<br/> 56/23 60/20 60/23 61/20<br/> 63/12 64/13 66/6 68/17<br/> 70/18 71/24 72/2 73/12<br/> 73/25 74/16 74/19 74/23<br/> 79/20 81/25 82/3 82/12<br/> 83/23 85/4 88/17 89/15</p> | <p>89/16 90/19 92/23 92/23<br/> 94/8 94/19 94/19 95/9<br/> 95/9 96/4 97/18 97/21<br/> 98/11 101/14 101/15 101/17<br/> 102/3 102/6 102/7 102/10<br/> 102/10 102/21 102/22<br/> 102/24 102/24 103/8<br/> 105/8 105/19 107/24<br/> 108/12 109/10 109/20 111/9<br/> 111/10 113/1 113/24 117/15<br/> 117/15 118/11 119/12 119/15<br/> 124/25 125/15 125/24<br/> 126/20 126/21 129/14<br/> 131/18 131/20 132/1 133/5<br/> 133/6 133/7 133/7 134/4<br/> 136/22 139/18 142/17<br/> 143/9 143/12 145/6 147/11<br/> 147/13 147/18 148/5 148/6<br/> 148/9 148/14 149/20 151/4<br/> 151/11 151/17 155/19 156/1<br/> 156/8 159/10 159/15 160/5<br/> 160/5 160/14 160/18 162/7<br/> 162/13 163/1 163/4 163/10<br/> 163/12 163/19 164/14<br/> 165/2 165/12 165/25<br/> 166/13 166/25 168/8<br/> 168/12 170/9 172/9 173/13<br/> 174/19 176/19 178/15<br/> 178/22 179/2 179/19 180/2<br/> 181/13 182/3 183/15 184/19<br/> 186/3 186/24 190/15 194/4<br/> 197/10 197/14 197/22<br/> 198/3 198/25 199/7 199/19<br/> 201/11 201/17 201/18<br/> 203/19 203/23 211/20<br/> 212/25 214/18 216/24<br/> 217/16 218/19 219/20<br/> 220/9 221/16 221/17<br/> 221/23 222/3 223/15<br/> 224/21 227/5 227/17<br/> 227/24 228/8 228/8<br/> 228/9 228/10 228/14</p> | <p>228/18 229/16 229/21<br/> 229/22 229/25 230/25<br/> 230/25 232/20 232/25<br/> 233/17 234/14 234/15<br/> 236/7 236/10 236/19<br/> 237/2 237/17 238/10<br/> 238/13 238/17 239/21<br/> 239/23 240/5 240/10<br/> 240/17 241/4 241/15<br/> 242/13 244/24 248/15<br/> 249/8 251/16 253/8<br/> 254/10 260/11 261/3<br/> <b>ifs</b> [1] 221/16<br/> <b>Ike</b> [1] 5/22<br/> <b>ill</b> [1] 105/25<br/> <b>Illinois</b> [2] 2/11 145/25<br/> <b>illuminated</b> [1] 73/16<br/> <b>illustrate</b> [1] 21/14<br/> <b>IM</b> [2] 242/8 242/12<br/> <b>imagine</b> [1] 77/19<br/> <b>immediate</b> [5] 70/25 71/1<br/> 74/15 159/6 226/21<br/> <b>immediately</b> [6] 64/23<br/> 74/11 75/25 83/9 138/6<br/> 140/7<br/> <b>impact</b> [2] 42/8 105/3<br/> <b>impacts</b> [2] 212/1 218/18<br/> <b>impaired</b> [1] 45/1<br/> <b>impart</b> [1] 209/13<br/> <b>imparts</b> [1] 22/20<br/> <b>impending</b> [1] 68/12<br/> <b>import</b> [1] 218/9<br/> <b>importance</b> [2] 53/11 53/19<br/> <b>important</b> [12] 40/8 40/9<br/> 45/11 93/24 95/2 102/6<br/> 108/7 119/14 165/23<br/> 204/13 244/12 251/7<br/> <b>importing</b> [1] 218/4<br/> <b>impose</b> [1] 54/18<br/> <b>impractical</b> [1] 56/12<br/> <b>impression</b> [1] 117/8<br/> <b>improper</b> [13] 20/17 60/13</p> |
|--|---|---|

|                                   |                                    |                                   |
|-----------------------------------|------------------------------------|-----------------------------------|
| <b>I</b>                          | 166/10                             | <b>individuals [11]</b> 45/11     |
| <b>improper...</b> [11] 63/2      | <b>incongruent [1]</b> 166/21      | 67/10 91/6 91/18 94/14            |
| 63/7 73/23 74/1 192/12            | <b>inconsistent [5]</b> 36/14      | 107/15 174/14 209/5               |
| 193/22 194/1 215/5 215/9          | 36/17 151/12 244/2 256/10          | 209/10 215/20 242/12              |
| 246/6 259/13                      | <b>incorporate [1]</b> 205/6       | <b>Indonesia [6]</b> 216/3 221/13 |
| <b>in [831]</b>                   | <b>incorporates [2]</b> 204/12     | 221/17 221/24 228/17              |
| <b>in 2019 [1]</b> 226/5          | 204/25                             | 259/25                            |
| <b>in-house [1]</b> 10/20         | <b>incorrect [6]</b> 130/16 151/12 | <b>Indonesian [22]</b> 18/24      |
| <b>in-service [1]</b> 48/25       | 165/19 165/20 165/24               | 55/21 56/4 56/15 59/11            |
| <b>inability [1]</b> 42/9         | 169/8                              | 59/20 59/25 60/7 60/11            |
| <b>inaccurate [4]</b> 28/5 87/13  | <b>incorrectly [4]</b> 139/7       | 61/12 64/8 66/2 67/14             |
| 108/16 254/21                     | 140/6 222/15 223/9                 | 67/17 76/19 76/20 80/3            |
| <b>inadequate [4]</b> 195/5 195/7 | <b>increases [1]</b> 83/22         | 183/5 200/9 245/22                |
| 254/9 254/11                      | <b>increasing [2]</b> 24/19 24/19  | 246/13 254/16                     |
| <b>inadmissible [1]</b> 235/17    | <b>incredibly [6]</b> 141/15       | <b>Indonesians [2]</b> 76/24      |
| <b>inappropriate [1]</b> 62/2     | 141/16 216/4 223/3 223/3           | 246/17                            |
| <b>inartful [1]</b> 210/25        | 223/4                              | <b>industry [12]</b> 16/14 21/10  |
| <b>incident [6]</b> 9/2 9/6 10/14 | <b>incumbent [3]</b> 107/7 121/6   | 43/10 46/25 47/9 51/12            |
| 10/18 10/21 225/6                 | 121/10                             | 57/23 65/8 104/8 148/10           |
| <b>incidents [3]</b> 10/23 13/14  | <b>indeed [2]</b> 36/24 68/22      | 177/1 195/19                      |
| 52/13                             | <b>independent [2]</b> 193/8       | <b>inexperience [1]</b> 13/4      |
| <b>inclined [2]</b> 49/10 232/21  | 247/25                             | <b>inference [1]</b> 253/17       |
| <b>include [11]</b> 38/18 45/3    | <b>Index.....</b>                  | <b>inferences [2]</b> 243/19      |
| 54/16 88/25 100/19 141/12         | <b>.....263 [1]</b> 3/16           | 247/3                             |
| 163/24 164/18 170/20              | <b>indicate [3]</b> 57/2 166/6     | <b>inflated [1]</b> 206/13        |
| 190/6 216/16                      | 215/24                             | <b>inflection [1]</b> 224/6       |
| <b>included [12]</b> 29/2 45/14   | <b>indicated [5]</b> 24/5 42/11    | <b>influence [8]</b> 40/15 40/17  |
| 91/23 93/2 94/11 157/7            | 43/1 148/21 206/5                  | 48/2 194/24 255/22                |
| 214/13 214/13 229/5               | <b>indicates [2]</b> 139/5 186/10  | 255/25 256/13 256/14              |
| 236/22 236/25 246/8               | <b>indicating [2]</b> 22/9 90/3    | <b>influencing [1]</b> 40/14      |
| <b>includes [9]</b> 38/20 54/15   | <b>indication [3]</b> 55/24 56/2   | <b>inform [2]</b> 163/9 180/11    |
| 88/14 93/2 93/9 97/23             | 70/17                              | <b>information [156]</b> 15/23    |
| 97/25 98/1 245/5                  | <b>indications [3]</b> 68/7 68/14  | 18/19 19/2 19/8 20/20             |
| <b>including [16]</b> 45/10 46/10 | 119/1                              | 28/2 28/4 29/2 31/25              |
| 46/18 47/11 49/16 70/22           | <b>indicative [1]</b> 187/11       | 36/11 36/22 36/23 38/3            |
| 91/17 92/1 151/25 177/8           | <b>indicator [1]</b> 70/13         | 40/8 45/3 45/9 50/9 52/3          |
| 190/11 200/9 220/24               | <b>indicia [2]</b> 217/8 219/20    | 52/8 60/8 61/2 62/22              |
| 221/6 228/17 230/6                | <b>indictment [1]</b> 191/1        | 64/20 66/12 66/15 74/6            |
| <b>inclusion [1]</b> 20/7         | <b>individual [7]</b> 92/10 92/13  | 74/9 76/15 90/16 91/8             |
| <b>incomplete [10]</b> 28/6       | 107/3 149/5 192/20 216/11          | 91/13 92/4 92/14 92/18            |
| 108/16 163/17 164/1 164/2         | 216/17                             | 95/3 97/5 98/8 98/25              |
| 164/15 164/17 166/1 166/8         | <b>individually [1]</b> 67/9       | 99/3 99/11 99/13 99/14            |

|  |   |  |
|--|---|--|
| <p><b>I</b><br/> <b>information...</b> [114]<br/> 100/24 103/15 103/22<br/> 104/2 104/6 106/4 106/5<br/> 106/8 106/12 106/22<br/> 107/10 107/14 107/16<br/> 107/25 108/5 108/12<br/> 108/14 109/14 109/19<br/> 109/23 109/24 110/19<br/> 111/21 113/16 116/19 118/18<br/> 118/20 119/11 120/23 121/1<br/> 123/4 123/22 123/23<br/> 124/19 125/1 125/4 125/7<br/> 125/8 126/15 129/11 130/12<br/> 130/15 131/2 131/12 132/11<br/> 132/25 133/24 134/1<br/> 134/22 135/4 135/18<br/> 140/17 140/18 140/20<br/> 150/4 151/5 152/22 152/24<br/> 153/6 154/9 159/10 163/24<br/> 164/13 164/18 167/25<br/> 168/9 169/17 171/16 172/12<br/> 173/16 174/10 175/17<br/> 175/25 176/11 176/12<br/> 178/9 180/14 180/19 181/9<br/> 182/17 183/6 183/8 190/23<br/> 197/12 197/18 199/1<br/> 200/16 200/23 201/1<br/> 207/23 208/7 216/18<br/> 220/25 221/6 221/7<br/> 221/10 223/14 223/17<br/> 223/20 223/23 224/17<br/> 224/20 230/5 231/4 231/6<br/> 231/23 232/4 234/1<br/> 237/22 237/25 238/1<br/> 238/2 239/9 258/3<br/> <b>informed</b> [2] 195/16 229/2<br/> <b>informing</b> [1] 163/21<br/> <b>inherently</b> [1] 176/7<br/> <b>initial</b> [1] 204/16<br/> <b>initially</b> [1] 157/20<br/> <b>input</b> [1] 116/2</p> | <p><b>inputs</b> [1] 69/25<br/> <b>inquired</b> [1] 62/3<br/> <b>inquiring</b> [1] 56/20<br/> <b>inquiry</b> [2] 56/25 205/9<br/> <b>inside</b> [1] 15/2<br/> <b>insist</b> [1] 252/10<br/> <b>insofar</b> [1] 185/4<br/> <b>installed</b> [6] 139/6 139/7<br/> 140/6 168/17 222/15<br/> 223/8<br/> <b>instance</b> [4] 114/19 215/6<br/> 215/15 219/25<br/> <b>instant</b> [1] 61/4<br/> <b>instead</b> [2] 75/14 103/23<br/> <b>instinct</b> [1] 89/11<br/> <b>instinctively</b> [2] 163/1<br/> 163/2<br/> <b>instructed</b> [2] 128/15<br/> 253/20<br/> <b>instructions</b> [1] 189/10<br/> <b>instructive</b> [2] 250/2<br/> 251/25<br/> <b>insufficient</b> [1] 34/24<br/> <b>intend</b> [1] 156/23<br/> <b>intended</b> [17] 29/19 74/8<br/> 87/23 96/16 98/12 102/25<br/> 103/1 118/4 119/23 120/7<br/> 121/9 124/14 133/14 146/18<br/> 190/1 226/10 226/12<br/> <b>intending</b> [1] 169/21<br/> <b>intent</b> [4] 20/6 29/4<br/> 105/25 210/18<br/> <b>intentional</b> [2] 28/2 87/11<br/> <b>intentionally</b> [5] 92/13<br/> 92/19 95/13 96/21 99/11<br/> <b>interact</b> [2] 11/7 47/1<br/> <b>interacted</b> [1] 11/23<br/> <b>interacting</b> [5] 11/22 12/12<br/> 52/17 177/14 184/21<br/> <b>interaction</b> [1] 11/5<br/> <b>interactions</b> [1] 64/19<br/> <b>interconnectedness</b> [1]</p> | <p>64/25<br/> <b>interest</b> [3] 59/12 198/16<br/> 260/10<br/> <b>interested</b> [2] 198/23<br/> 200/10<br/> <b>interesting</b> [4] 51/18 63/11<br/> 68/18 199/25<br/> <b>interfere</b> [1] 63/25<br/> <b>interfered</b> [1] 45/2<br/> <b>interim</b> [17] 4/6 66/8<br/> 78/17 79/9 79/25 82/10<br/> 108/13 127/25 132/24<br/> 161/23 188/25 189/19<br/> 215/15 255/2 255/5 257/8<br/> 257/15<br/> <b>internal</b> [1] 184/16<br/> <b>internally</b> [2] 184/22<br/> 214/25<br/> <b>international</b> [7] 13/22<br/> 50/24 188/19 189/25<br/> 194/23 246/14 246/22<br/> <b>Internet</b> [1] 52/6<br/> <b>interpretation</b> [2] 188/5<br/> 242/9<br/> <b>interpretations</b> [1] 202/9<br/> <b>interrupt</b> [4] 134/16 161/14<br/> 161/17 233/19<br/> <b>interval</b> [1] 164/20<br/> <b>intervening</b> [8] 204/18<br/> 204/20 211/17 229/7<br/> 229/8 256/24 257/4<br/> 257/5<br/> <b>intimate</b> [1] 133/19<br/> <b>into</b> [57] 6/14 8/6 9/1 9/3<br/> 14/2 18/14 20/14 27/22<br/> 32/9 37/15 39/5 41/8 53/6<br/> 58/7 58/15 58/25 59/3<br/> 59/6 59/20 59/23 64/2<br/> 67/7 70/6 71/10 73/20<br/> 77/11 95/20 95/22 98/11<br/> 113/22 123/20 124/3<br/> 126/24 143/14 147/18</p> |
|--|---|--|

|   |   |   |
|---|---|---|
| <b>I</b><br><b>into...</b> [22] 155/16 156/23<br>161/2 170/9 175/21 176/11<br>182/20 198/2 210/11<br>210/21 218/5 218/9 223/14<br>228/2 228/10 230/15<br>231/2 243/17 244/13<br>245/11 247/13 254/24<br><b>introduce</b> [1] 5/12<br><b>introduced</b> [7] 110/9<br>110/12 132/22 145/21<br>155/21 244/14 246/9<br><b>introduces</b> [1] 168/14<br><b>introducing</b> [1] 121/22<br><b>intuitively</b> [1] 69/14<br><b>investigated</b> [2] 13/18<br>67/14<br><b>investigating</b> [1] 257/21<br><b>investigation</b> [11] 10/14<br>51/1 59/20 60/5 62/19<br>63/1 216/2 245/13 245/18<br>246/15 259/24<br><b>investigations</b> [3] 51/10<br>65/20 246/11<br><b>investigative</b> [2] 189/20<br>214/14<br><b>investigators</b> [1] 245/19<br><b>invisible</b> [1] 26/6<br><b>invited</b> [1] 49/5<br><b>invocation</b> [1] 6/22<br><b>involve</b> [2] 50/16 154/2<br><b>involved</b> [22] 9/8 9/11 9/15<br>9/25 10/16 36/6 51/2<br>65/20 67/10 85/4 111/20<br>115/16 115/20 124/22<br>133/15 143/17 144/2 185/11<br>223/14 237/20 238/14<br>245/18<br><b>involves</b> [3] 13/12 13/13<br>133/16<br><b>involving</b> [1] 145/1<br><b>irrelevant</b> [2] 151/7 153/16 | <b>irrespective</b> [1] 111/15<br><b>is</b> [621]<br><b>issue</b> [34] 41/19 42/18<br>46/15 47/18 78/14 79/7<br>97/7 97/11 118/1 119/10<br>123/19 124/8 124/9 132/19<br>133/19 143/5 172/21<br>173/17 178/19 188/25<br>197/1 197/19 199/15<br>204/16 209/16 209/19<br>217/23 218/2 222/22<br>228/21 245/9 248/17<br>251/16 253/19<br><b>issued</b> [8] 49/20 128/5<br>128/18 134/1 173/25<br>238/21 238/22 259/20<br><b>issues</b> [26] 8/21 15/7 15/19<br>16/22 20/3 30/14 31/23<br>32/14 99/21 100/14 100/19<br>122/3 125/2 131/6 131/6<br>132/1 138/18 138/23 204/1<br>215/22 217/12 217/15<br>217/15 218/6 222/12 241/6<br><b>it</b> [595]<br><b>it's</b> [158] 6/12 6/13 22/4<br>22/9 22/16 22/17 24/25<br>26/24 30/6 30/7 30/9<br>31/8 38/25 41/4 44/2<br>44/19 46/17 47/19 48/6<br>48/8 48/11 51/4 51/6 53/7<br>55/25 56/25 58/3 58/4<br>58/25 59/25 62/9 63/11<br>65/15 66/5 66/5 66/17<br>66/19 68/1 70/25 73/3<br>73/6 75/20 76/1 78/14<br>81/16 82/1 82/11 82/21<br>86/22 86/24 90/6 90/20<br>95/9 100/4 100/5 100/8<br>102/18 102/18 102/19<br>102/20 105/11 107/17<br>109/20 113/3 114/21 117/16<br>121/21 122/10 122/23 | 124/8 124/13 130/7 130/22<br>130/22 130/25 131/9 132/3<br>132/23 133/3 133/9 135/8<br>137/2 137/12 137/19<br>138/22 139/8 139/21<br>139/21 140/22 143/11<br>145/9 147/6 151/9 152/21<br>152/22 155/17 155/19<br>157/22 159/20 160/12<br>163/6 163/25 165/5 165/7<br>165/22 166/7 167/2 168/4<br>169/22 172/3 173/10<br>176/15 178/15 186/7 188/6<br>193/10 193/13 193/20<br>194/14 199/19 201/4<br>204/14 204/15 206/5<br>206/7 207/4 207/7 207/7<br>207/20 207/21 207/22<br>210/6 211/23 212/1 215/21<br>215/22 217/19 217/23<br>219/8 219/10 219/19 224/3<br>234/14 234/15 234/16<br>235/20 235/20 242/6<br>244/11 248/17 252/1<br>252/5 252/6 253/16 255/1<br>255/8 255/20 256/5<br><b>item</b> [6] 18/2 18/11 18/23<br>18/23 158/21 159/2<br><b>items</b> [8] 88/23 100/10<br>100/13 159/6 159/9 159/9<br>159/11 190/3<br><b>its</b> [41] 20/7 21/8 24/23<br>25/17 28/10 28/19 29/3<br>29/4 29/4 31/23 46/4<br>54/13 69/20 75/14 75/15<br>75/23 80/9 88/1 88/7<br>88/11 91/2 98/16 111/10<br>124/11 126/19 139/1 161/2<br>161/19 168/7 176/13 180/14<br>189/8 195/3 204/21<br>204/21 208/1 222/18<br>239/24 249/8 253/1 |
|---|---|---|



|                                  |                                   |                                 |
|----------------------------------|-----------------------------------|---------------------------------|
| <b>I</b>                         | 193/4                             | 142/22 144/24 147/1 152/2       |
| its... [1] 258/23                | <b>junction</b> [2] 119/19 120/11 | 152/24 155/5 156/8              |
| <b>itself</b> [13] 79/23 94/9    | <b>June</b> [2] 61/5 145/24       | 156/24 160/22 160/24            |
| 131/25 178/14 186/19             | <b>June 15th of</b> [1] 145/24    | 161/4 161/7 162/3 163/7         |
| 186/21 187/1 187/3 187/8         | <b>jurors</b> [1] 198/25          | 163/13 164/6 166/17 167/1       |
| 207/2 217/8 218/21 240/9         | <b>jury</b> [5] 44/6 244/4        | 167/19 168/13 168/20            |
|                                  | 255/19 255/21 256/7               | 169/1 172/2 172/6 173/24        |
| <b>J</b>                         | <b>just</b> [225] 5/11 8/10 8/24  | 176/2 177/19 177/21             |
| <b>Jackson</b> [1] 2/13          | 9/3 9/14 12/2 12/14 12/21         | 178/23 179/2 180/12             |
| <b>JACOBS</b> [8] 1/19 131/22    | 13/16 13/24 14/1 14/3 16/3        | 181/22 185/4 185/8 185/23       |
| 188/23 238/4 239/17              | 16/3 16/21 17/12 18/1             | 187/3 188/11 189/24 191/14      |
| 241/19 241/21 255/3              | 18/15 18/22 21/11 22/13           | 192/1 192/6 193/13 195/11       |
| <b>Jacobs'</b> [1] 40/3          | 23/18 23/24 24/25 26/15           | 197/1 197/8 199/5 202/11        |
| <b>Jacobs</b> .....              | 27/25 28/8 29/13 29/25            | 204/14 206/6 210/5              |
| .....220 [1] 3/12                | 30/8 31/21 34/7 37/1 37/7         | 218/17 219/15 221/16            |
| <b>Jacobs</b> .....85            | 37/11 37/16 37/24 38/18           | 223/16 224/24 225/17            |
| [1] 3/6                          | 40/10 41/9 41/13 43/1             | 226/6 226/20 228/12             |
| <b>Jakarta</b> [1] 83/2          | 43/5 44/21 45/8 45/10             | 228/13 228/25 231/7             |
| <b>January</b> [1] 31/3          | 45/12 46/1 48/4 48/16             | 231/25 232/5 234/25             |
| <b>Japanese</b> [1] 55/11        | 48/16 50/9 51/11 52/15            | 235/7 235/22 236/1 236/5        |
| <b>Java</b> [1] 259/23           | 52/25 53/7 53/13 54/19            | 237/7 237/12 238/7              |
| <b>Javier</b> [1] 6/1            | 54/20 55/7 55/20 56/21            | 239/12 242/8 242/15             |
| <b>JCAB</b> [3] 54/24 55/9       | 57/25 58/2 58/9 59/25             | 242/16 243/16 247/17            |
| 55/10                            | 60/3 61/2 61/11 62/11             | 247/22 250/1 251/7              |
| <b>Jedi</b> [2] 58/15 59/8       | 64/24 65/6 65/19 66/1             | 252/19 258/8 260/15             |
| <b>JERROB</b> [2] 1/18 6/7       | 67/6 68/17 68/24 69/8             | 261/9                           |
| <b>job</b> [4] 13/10 13/12 14/1  | 70/13 70/25 71/17 72/14           | <b>justice</b> [21] 15/17 34/12 |
| 198/9                            | 72/20 72/23 73/8 76/6             | 35/23 36/10 36/17 36/21         |
| <b>jobs</b> [1] 14/1             | 76/18 78/3 79/4 80/2              | 39/23 40/5 40/21 41/5           |
| <b>join</b> [1] 41/11            | 82/12 83/2 83/24 84/3             | 44/4 109/16 109/22 121/25       |
| <b>joint</b> [2] 10/13 152/22    | 87/9 87/22 91/20 94/10            | 191/1 203/5 215/16 220/6        |
| <b>JUDGE</b> [8] 1/14 15/21 43/1 | 95/6 95/20 95/22 96/23            | 246/23 255/19 256/6             |
| 151/6 153/10 154/22 155/5        | 96/25 97/24 97/25 100/12          |                                 |
| 177/25                           | 101/11 109/9 110/14 111/8         | <b>K</b>                        |
| <b>judgment</b> [1] 239/24       | 111/25 113/4 113/10 113/25        | <b>keep</b> [4] 106/5 126/5     |
| <b>Judicial</b> [1] 262/13       | 117/14 118/9 120/14 121/4         | 130/17 260/24                   |
| <b>July</b> [2] 145/15 197/20    | 122/11 122/14 122/23              | <b>keeps</b> [2] 71/9 97/13     |
| <b>July 27th</b> [1] 197/20      | 123/10 123/25 124/6 124/9         | <b>Kellie</b> [1] 5/17          |
| <b>jump</b> [2] 31/1 31/3        | 124/18 125/12 125/13              | <b>kept</b> [3] 113/7 114/9     |
| <b>jumpseat</b> [3] 192/19 193/9 | 125/15 125/21 126/4 126/7         | 120/17                          |
| 193/10                           | 131/22 132/1 135/7 135/8          | <b>Keyes</b> [18] 42/17 43/25   |
| <b>jumpseating</b> [2] 193/2     | 136/16 139/2 140/3 141/24         | 65/2 149/24 150/2 150/8         |
|                                  |                                   | 198/19 199/12 199/19            |

|                                   |                                   |                            |
|-----------------------------------|-----------------------------------|----------------------------|
| <b>K</b>                          | 104/22 106/16 106/23              | 129/13 129/14 130/7 131/17 |
| <b>Keyes...</b> [9] 199/22 201/15 | 108/8 117/25 118/5 118/15         | 132/18 132/22 133/5 133/9  |
| 238/6 244/13 247/10               | 118/15 118/16 118/19 119/16       | 134/3 134/4 134/10 134/11  |
| 248/18 249/19 250/17              | 119/22 120/6 120/18 122/11        | 134/24 134/24 134/25       |
| 256/16                            | 125/13 126/8 126/10               | 136/22 139/18 139/20       |
| <b>Keyes'</b> [6] 4/4 150/11      | 128/19 128/21 128/23              | 142/9 142/10 143/12 145/6  |
| 150/18 150/24 151/14              | 129/10 130/2 130/16 131/11        | 146/13 146/18 148/14       |
| 236/9                             | 132/14 132/17 134/3 134/4         | 150/8 150/13 150/23        |
| <b>keystone</b> [1] 240/25        | 134/4 134/8 135/20 164/7          | 154/10 155/14 158/23       |
| <b>kick</b> [3] 113/3 229/17      | 170/25 171/6 171/7 172/16         | 160/7 162/8 167/15 168/8   |
| 231/3                             | 172/16 173/25 176/7               | 169/7 172/2 172/3 172/14   |
| <b>kicked</b> [2] 132/16 229/6    | 200/18 212/16 221/5               | 172/15 172/17 172/25       |
| <b>kicking</b> [2] 229/15 230/16  | 224/8 224/14 225/16               | 173/10 173/13 173/16       |
| <b>kicks</b> [2] 231/1 231/12     | 226/9 226/11 230/23               | 173/24 174/7 174/11        |
| <b>killed</b> [3] 66/24 67/12     | 241/25 243/7 251/20               | 175/13 175/24 176/12       |
| 85/9                              | 254/16 255/14 260/3               | 176/19 177/2 177/3 177/7   |
| <b>killling</b> [2] 59/14 62/15   | 260/3                             | 177/16 177/17 177/25       |
| <b>kind</b> [17] 11/7 18/22 26/22 | <b>KNKT</b> [1] 4/5               | 178/3 178/15 178/17        |
| 35/3 67/6 67/20 67/24             | <b>knots</b> [7] 126/1 132/5      | 178/17 178/17 179/13       |
| 149/6 193/7 200/21                | 186/25 187/13 187/21              | 179/21 180/12 183/15       |
| 206/23 216/3 217/22               | 187/23 187/24                     | 184/19 185/5 187/5 192/17  |
| 245/15 245/16 248/25              | <b>know</b> [215] 8/8 11/12 11/16 | 198/1 198/7 198/13 199/19  |
| 252/23                            | 12/9 14/11 16/21 21/12            | 200/11 200/12 201/3 201/7  |
| <b>kinds</b> [10] 36/8 36/12      | 29/23 31/25 36/22 37/8            | 201/21 206/24 208/17       |
| 123/20 194/13 202/13              | 37/11 39/7 40/7 40/13             | 209/13 212/3 212/25        |
| 209/10 215/15 215/23              | 52/6 55/10 55/13 57/21            | 214/19 215/9 215/18        |
| 218/6 241/10                      | 66/5 67/25 69/18 69/21            | 215/20 215/21 216/19       |
| <b>KIRKLAND</b> [1] 2/20          | 74/19 77/23 83/18 84/15           | 216/22 217/20 217/24       |
| <b>Klein</b> [20] 32/17 33/2      | 84/15 86/19 89/11 89/14           | 219/10 220/5 221/24        |
| 33/18 36/1 36/2 37/11             | 90/13 91/15 91/15 92/13           | 223/22 224/10 224/12       |
| 38/1 40/9 40/12 40/16             | 92/23 92/25 94/9 94/24            | 224/13 225/6 225/17        |
| 43/3 44/13 107/22 108/14          | 96/2 96/4 97/24 98/10             | 225/18 228/13 228/13       |
| 123/17 151/21 230/21              | 99/18 106/10 106/10 106/11        | 228/19 229/11 229/11       |
| 243/25 255/24 256/4               | 108/11 109/20 110/17 111/8        | 230/2 231/7 234/11         |
| <b>Klein's</b> [13] 35/6 35/9     | 111/9 113/7 114/11 114/13         | 238/10 239/9 239/10        |
| 35/18 38/18 40/15 44/6            | 115/1 115/11 115/13 115/13        | 241/3 243/6 244/22         |
| 44/17 108/18 153/2 153/11         | 115/13 115/19 115/24              | 244/23 246/16 247/8        |
| 153/22 255/22 256/15              | 116/10 116/13 117/10 117/11       | 247/9 249/7 253/13         |
| <b>knew</b> [69] 93/12 94/4       | 119/20 120/15 120/17              | 253/13 253/15 253/15       |
| 94/14 94/16 95/4 98/24            | 121/17 123/6 123/21 125/7         | 254/15 255/16 256/3        |
| 99/18 103/14 104/2 104/10         | 125/9 125/13 125/16 126/9         | 257/14 257/20 258/7        |
| 104/17 104/18 104/22              | 126/11 126/15 127/1 128/21        | 259/7                      |

|   |   |  |
|---|---|--|
| <b>K</b>  | <b>language [4]</b> 62/2 93/22<br>147/15 208/22   | <b>learned [14]</b> 27/4 49/2<br>51/18 61/11 100/15 113/15   |
| <b>knowing [4]</b> 34/12 89/13<br>126/14 240/5  | <b>large [6]</b> 13/21 26/6 49/5<br>216/2 219/20 225/21   | 113/20 114/4 171/22 171/24<br>186/3 191/3 199/1 239/2  |
| <b>knowledge [33]</b> 8/20 8/25<br>14/8 14/15 20/1 43/8<br>48/17 49/12 50/1 52/19<br>65/17 75/17 83/3 92/9<br>92/11 97/15 111/4 120/12<br>143/13 151/2 167/15 170/14<br>170/20 173/4 194/19<br>208/20 209/22 210/16<br>212/14 212/17 216/11<br>232/4 242/17   | <b>largely [1]</b> 150/5<br><b>LaSalle [1]</b> 2/11<br><b>last [14]</b> 7/9 12/5 54/8<br>77/2 79/18 80/24 84/4<br>90/14 98/19 158/11 158/14<br>195/11 201/10 210/9<br><b>lasted [1]</b> 96/9<br><b>late [1]</b> 158/16<br><b>lately [1]</b> 164/23<br><b>later [23]</b> 7/2 88/24 89/15<br>89/22 109/25 119/21 128/3<br>131/5 163/12 163/22 167/4<br>167/20 172/11 190/5<br>198/14 227/11 228/22<br>231/25 238/16 241/7<br>242/3 254/16 256/8 | <b>learning [1]</b> 229/9<br><b>least [14]</b> 14/23 20/4<br>30/24 84/22 92/1 93/20<br>94/24 134/22 158/24<br>213/23 219/25 231/21<br>248/10 249/22<br><b>leave [4]</b> 118/8 118/10<br>136/16 213/4<br><b>leaving [3]</b> 69/9 88/8<br>157/12   |
| <b>known [15]</b> 20/6 30/19<br>32/21 83/21 105/15 167/2<br>171/4 206/21 224/11<br>225/20 226/10 232/23<br>241/17 241/18 260/13   | <b>latitude [1]</b> 82/13<br><b>law [15]</b> 2/3 2/10 28/18<br>28/22 28/22 75/12 146/8<br>146/14 202/10 211/7<br>215/10 237/15 250/10<br>251/13 252/4   | <b>led [2]</b> 221/10 242/5<br><b>left [3]</b> 98/18 109/10<br>158/9<br><b>left-hand [1]</b> 109/10<br><b>legal [1]</b> 183/14<br><b>legally [1]</b> 183/17<br><b>legged [3]</b> 98/14 125/19<br>169/13  |
| <b>knows [14]</b> 35/24 37/19<br>109/12 194/25 226/6<br>231/21 236/5 236/20<br>238/25 239/3 246/18<br>248/23 249/3 259/6  | <b>law-abiding [4]</b> 28/18<br>28/22 28/22 75/12<br><b>lawful [4]</b> 45/2 45/5<br>45/22 46/2<br><b>lawsuit [1]</b> 146/8<br><b>Lawyers [1]</b> 18/16<br><b>layers [2]</b> 219/22 219/25<br><b>layperson's [1]</b> 74/13<br><b>lays [1]</b> 183/20<br><b>lead [5]</b> 47/15 136/12<br>194/21 212/24 253/6<br><b>leaders [1]</b> 194/22<br><b>leading [3]</b> 157/8 225/22<br>253/1<br><b>learn [5]</b> 25/23 26/3 49/1<br>49/14 120/21       | <b>legs [3]</b> 104/25 105/7<br>127/7<br><b>length [1]</b> 258/11<br><b>lengthy [1]</b> 133/15<br><b>lens [1]</b> 205/1<br><b>less [7]</b> 50/5 77/23 77/24<br>143/6 204/24 211/18<br>211/23<br><b>let [26]</b> 8/24 12/9 15/25<br>16/3 29/20 29/21 65/19<br>68/24 71/4 74/23 91/20<br>96/5 99/25 101/10 111/8<br>125/12 148/14 185/23<br>190/13 197/8 212/12<br>216/14 226/20 243/17<br>250/1 252/19<br><b>let's [28]</b> 5/7 9/5 15/5<br>19/19 20/19 27/3 37/1<br>48/15 48/16 50/12 61/22<br>62/11 69/2 70/8 72/13 |
| <b>KREINDLER [2]</b> 2/7 2/7  |   |  |
| <b>L</b>  |   |  |
| <b>lack [9]</b> 35/10 41/15 46/16<br>80/8 80/14 87/12 221/4<br>223/17 253/17<br><b>lacked [2]</b> 28/4 259/3<br><b>lacks [1]</b> 37/5<br><b>Ladies [1]</b> 255/21<br><b>laid [3]</b> 197/21 235/11<br>245/21<br><b>Lake [1]</b> 2/5<br><b>land [7]</b> 140/13 140/15<br>201/12 201/17 222/9<br>223/12 232/11<br><b>landed [7]</b> 141/6 142/8<br>142/12 192/11 222/23<br>223/22 247/14<br><b>landing [2]</b> 213/15 223/5 |   |  |

|   |   |  |
|---|---|--|
| <p><b>L</b><br/> <b>let's...</b> [13] 101/18 134/18<br/> 168/25 191/6 192/7 198/6<br/> 199/7 200/15 236/13<br/> 236/23 248/21 249/10<br/> 250/24<br/> <b>lets</b> [1] 20/2<br/> <b>letting</b> [2] 37/7 37/11<br/> <b>level</b> [93] 10/5 16/7 16/17<br/> 17/4 19/22 27/12 27/15<br/> 27/15 27/18 27/21 29/14<br/> 29/16 29/19 29/23 30/1<br/> 30/3 30/5 30/6 30/8<br/> 30/15 30/24 32/4 32/12<br/> 33/3 34/15 34/21 34/23<br/> 34/25 35/3 40/17 41/19<br/> 42/3 42/13 42/21 43/4<br/> 46/5 47/9 54/5 56/20<br/> 56/22 56/24 57/2 58/24<br/> 58/25 61/18 63/18 65/10<br/> 71/25 72/2 72/2 74/22<br/> 75/2 84/14 89/18 89/22<br/> 99/19 108/19 108/22<br/> 123/19 123/19 127/5 138/2<br/> 159/18 160/4 175/22<br/> 175/25 181/9 182/10<br/> 184/13 187/21 198/4 198/8<br/> 198/14 198/21 199/1 199/8<br/> 214/16 214/16 217/21<br/> 221/10 226/23 227/3<br/> 227/18 236/16 236/21<br/> 236/24 238/11 238/11<br/> 238/11 238/12 238/13<br/> 247/13 255/25<br/> <b>Level B</b> [1] 238/11<br/> <b>Level D</b> [1] 32/4<br/> <b>Level-B</b> [9] 27/12 29/23<br/> 34/15 34/23 56/22 57/2<br/> 61/18 123/19 236/21<br/> <b>Level-D</b> [26] 16/7 16/17<br/> 19/22 29/14 30/8 30/24<br/> 32/12 33/3 42/3 42/13</p> | <p>42/21 43/4 65/10 123/19<br/> 138/2 181/9 198/4 198/8<br/> 198/14 198/21 199/1 199/8<br/> 221/10 236/16 236/24<br/> 247/13<br/> <b>Level-E</b> [3] 34/21 34/25<br/> 35/3<br/> <b>levels</b> [12] 14/14 27/8<br/> 29/12 43/13 152/12 176/25<br/> 195/4 195/16 200/8 217/6<br/> 217/17 242/25<br/> <b>Lexington</b> [1] 2/8<br/> <b>liability</b> [2] 203/7 208/25<br/> <b>liable</b> [1] 211/6<br/> <b>liberal</b> [1] 250/6<br/> <b>lie</b> [5] 43/15 112/24<br/> 129/22 202/4 256/13<br/> <b>lied</b> [2] 112/21 129/21<br/> <b>lies</b> [4] 27/12 29/14 29/15<br/> 41/21<br/> <b>life</b> [3] 69/23 72/17 96/8<br/> <b>life-or-death</b> [1] 72/17<br/> <b>lift</b> [1] 125/23<br/> <b>light</b> [5] 28/12 122/2<br/> 162/2 243/15 260/6<br/> <b>lights</b> [2] 73/8 73/12<br/> <b>like</b> [87] 12/10 18/2 18/23<br/> 21/13 21/16 22/2 22/9<br/> 23/5 23/7 25/1 26/9<br/> 28/24 31/14 31/15 33/6<br/> 39/9 40/1 40/10 45/24<br/> 51/20 51/20 57/10 59/9<br/> 65/18 66/6 66/11 69/6<br/> 73/22 74/18 88/14 90/3<br/> 98/3 100/10 107/2 108/15<br/> 109/6 111/2 120/25 128/15<br/> 131/25 133/12 135/15<br/> 136/22 144/21 145/13<br/> 150/14 162/13 162/24<br/> 164/24 165/12 181/13<br/> 186/19 186/21 187/1 187/5<br/> 187/8 193/9 202/22</p> | <p>202/24 203/15 203/23<br/> 207/14 210/4 210/8 211/13<br/> 213/25 214/13 217/19<br/> 220/9 222/19 223/15<br/> 231/9 231/11 233/19 236/7<br/> 237/16 249/3 249/8<br/> 249/11 250/25 251/22<br/> 258/24 258/25 259/7<br/> 259/8 260/18 261/3<br/> <b>like I'm</b> [1] 249/11<br/> <b>likelihood</b> [1] 74/10<br/> <b>likely</b> [3] 49/21 50/5<br/> 256/21<br/> <b>limit</b> [4] 50/2 52/7 190/8<br/> 208/25<br/> <b>limitation</b> [1] 75/24<br/> <b>limitations</b> [1] 13/4<br/> <b>limited</b> [19] 23/12 71/14<br/> 90/24 91/4 108/5 129/8<br/> 132/15 178/11 206/7 207/7<br/> 209/2 209/25 210/19<br/> 210/19 211/12 211/21<br/> 212/14 212/17 216/10<br/> <b>line</b> [9] 8/9 14/22 24/16<br/> 34/5 119/16 193/12 220/16<br/> 225/24 226/3<br/> <b>liner</b> [1] 178/18<br/> <b>lines</b> [7] 40/23 40/24 44/2<br/> 123/18 153/15 153/16<br/> 187/6<br/> <b>lingo</b> [1] 57/21<br/> <b>link</b> [3] 201/9 201/10<br/> 222/4<br/> <b>links</b> [11] 136/6 136/11<br/> 212/23 213/12 213/22<br/> 225/22 247/19 248/13<br/> 250/22 250/24 257/3<br/> <b>Lion</b> [83] 16/15 59/11<br/> 59/14 61/6 61/14 61/20<br/> 65/9 67/11 67/23 68/3<br/> 76/10 77/3 77/12 79/11<br/> 83/2 87/3 90/2 96/7</p> |
|---|---|--|



|                                    |                                  |                                    |
|------------------------------------|----------------------------------|------------------------------------|
| <b>L</b>                           | <b>living [2]</b> 75/20 226/24   | 208/25 249/1                       |
| <b>Lion...</b> [65] 97/19 108/24   | <b>LLC [2]</b> 277 2/23          | <b>looks [10]</b> 189/2 18/22 22/9 |
| 127/13 129/3 132/14                | <b>LLP [3]</b> 2/13 2/17 2/20    | 74/18 100/10 145/13                |
| 132/16 134/1 134/14 134/21         | <b>load [16]</b> 22/20 24/8      | 242/18 251/22 258/25               |
| 134/25 136/19 137/5 138/3          | 24/11 25/16 88/6 88/6            | 261/3                              |
| 138/7 138/14 139/6 140/7           | 96/17 98/18 101/13 102/9         | <b>loop [2]</b> 113/8 114/9        |
| 157/8 157/9 161/18 162/11          | 136/4 136/9 168/16 169/4         | <b>loose [1]</b> 251/25            |
| 169/7 171/1 171/9 171/21           | 169/24 170/10                    | <b>losses [1]</b> 206/18           |
| 172/3 173/23 178/2 192/10          | <b>local [2]</b> 83/1 83/24      | <b>lost [6]</b> 5/16 5/20 5/22     |
| 192/18 193/5 193/13                | <b>locally [1]</b> 52/14         | 5/24 6/1 159/11                    |
| 193/22 193/23 199/9                | <b>locked [1]</b> 124/3          | <b>lot [13]</b> 31/25 84/3 143/14  |
| 200/16 212/11 220/12               | <b>lockstep [3]</b> 40/24 48/4   | 156/13 170/24 185/24               |
| 221/20 222/5 223/7                 | 50/10                            | 202/1 209/11 211/1 236/1           |
| 223/24 224/2 224/2                 | <b>Loffing [5]</b> 135/25 136/2  | 254/14 257/11 260/11               |
| 224/5 224/10 224/11                | 136/5 136/10 208/12              | <b>lots [1]</b> 214/12             |
| 224/19 225/1 225/7 225/9           | <b>Loftus [1]</b> 211/21         | <b>loud [5]</b> 71/5 71/7 141/16   |
| 225/23 225/25 226/1                | <b>log [1]</b> 52/11             | 145/18 223/4                       |
| 227/20 229/9 231/20                | <b>logical [1]</b> 125/15        | <b>low [50]</b> 64/2 92/20 94/2    |
| 231/20 238/23 239/1                | <b>long [13]</b> 8/22 53/7 59/25 | 106/8 114/4 120/22 125/20          |
| 239/20 257/14 258/1                | 66/2 66/5 67/1 71/18 96/6        | 128/20 129/19 130/5 132/6          |
| 259/21 259/22                      | 96/10 116/8 132/23               | 134/9 134/14 170/25 171/4          |
| <b>Lion Air [1]</b> 222/5          | 248/24 255/7                     | 171/10 172/12 173/25               |
| <b>list [12]</b> 88/23 99/21       | <b>longer [5]</b> 11/20 129/7    | 174/4 178/4 187/12 187/13          |
| 100/10 117/16 132/23               | 132/15 170/3 224/12              | 187/20 188/3 212/16 221/8          |
| 133/3 145/14 145/24                | <b>look [36]</b> 15/22 21/13     | 224/14 224/19 229/3                |
| 146/11 146/12 206/20               | 21/16 23/5 28/24 29/9            | 229/6 229/17 229/19                |
| 255/7                              | 54/20 61/22 70/18 70/24          | 230/1 231/22 236/23                |
| <b>listed [1]</b> 147/2            | 94/8 94/19 105/7 109/10          | 237/8 237/17 237/24                |
| <b>listened [1]</b> 248/3          | 111/13 116/3 122/1 131/18        | 238/7 238/25 239/2                 |
| <b>listening [1]</b> 37/14         | 133/6 133/6 144/24 148/5         | 239/3 239/10 241/15                |
| <b>listing [1]</b> 148/13          | 181/16 199/23 204/8 205/1        | 243/7 254/17 255/14                |
| <b>Literally [1]</b> 138/13        | 205/14 206/6 209/24              | 259/15 259/16 260/3                |
| <b>litigants [1]</b> 245/17        | 250/25 251/13 254/15             | <b>low-speed [27]</b> 64/2 94/2    |
| <b>litigation [1]</b> 86/8         | 254/23 258/2 258/24              | 106/8 114/4 134/14 170/25          |
| <b>little [17]</b> 9/24 10/15 27/5 | 260/11                           | 171/4 173/25 178/4 212/16          |
| 48/16 72/20 72/21 87/10            | <b>looked [10]</b> 41/21 76/19   | 221/8 229/19 236/23                |
| 88/24 135/1 140/22 147/18          | 214/9 231/8 237/16               | 237/8 237/17 237/24                |
| 184/17 203/24 203/25               | 245/15 249/3 249/8 259/7         | 238/25 239/2 239/3                 |
| 250/24 252/16 252/22               | 259/7                            | 239/10 241/15 243/7                |
| <b>live [2]</b> 249/9 259/1        | <b>looking [12]</b> 15/10 31/9   | 254/17 255/14 259/15               |
| <b>lives [4]</b> 16/18 65/12 76/3  | 34/4 50/19 53/5 86/24            | 259/16 260/3                       |
| 107/9                              | 113/10 167/9 171/8 194/5         | <b>lower [4]</b> 70/22 72/3        |

|  |   |  |
|--|---|--|
| <p><b>L</b><br/> lower... [2] 102/3 129/4<br/> Luis [2] 6/1 6/2<br/> lunch [1] 144/8<br/> lurked [1] 256/24<br/> lying [2] 41/23 202/16</p>  | <p>176/19 176/23 181/11<br/> 181/14 191/22 195/16<br/> 202/24 203/17 203/18<br/> 214/17 216/8 217/22<br/> 218/13 220/4 220/5<br/> 235/19 245/17 248/3<br/> 248/4</p>  | <p>48/1 48/6 107/1 133/17<br/> manufacturers [1] 22/22<br/> many [18] 12/7 12/11 49/2<br/> 86/4 90/12 95/17 117/11<br/> 136/7 136/11 152/21 174/11<br/> 174/14 176/23 189/23<br/> 202/21 242/25 243/25<br/> 251/10</p>   |
| <p><b>M</b><br/> ma'am [4] 153/20 156/11<br/> 174/16 196/4<br/> Mach [19] 24/3 24/4 24/6<br/> 25/15 25/16 34/13 40/10<br/> 92/1 93/23 101/13 101/13<br/> 104/23 112/16 113/12<br/> 119/18 119/19 125/21 126/2<br/> 130/5<br/> Mach .2 [1] 130/5<br/> machines [1] 116/15<br/> Machish [1] 187/13<br/> made [22] 20/6 26/8<br/> 32/18 33/23 37/6 105/25<br/> 108/23 111/10 123/3 124/16<br/> 158/19 168/7 169/15<br/> 174/10 177/4 194/18 206/4<br/> 218/8 237/2 237/19<br/> 249/23 259/1<br/> MAE [1] 86/1<br/> magnitude [2] 204/21<br/> 213/12<br/> main [1] 100/13<br/> maintain [3] 42/6 69/8<br/> 166/1<br/> maintenance [4] 138/18<br/> 138/22 189/9 222/12<br/> major [5] 11/1 100/19<br/> 107/1 126/23 177/3<br/> make [39] 22/22 26/20<br/> 36/8 46/4 53/23 54/10<br/> 67/19 70/15 74/23 101/11<br/> 102/14 106/20 111/23<br/> 111/24 128/3 131/1 134/18<br/> 135/17 150/4 175/14</p> | <p>makes [3] 92/17 250/9<br/> 256/6<br/> making [12] 99/18 104/14<br/> 114/21 124/23 174/12<br/> 175/10 177/9 178/11 181/4<br/> 181/7 181/25 233/8<br/> Malaysia [2] 56/7 146/15<br/> Malaysian [1] 146/1<br/> managed [1] 58/21<br/> managers [1] 170/18<br/> mandate [2] 30/13 49/17<br/> mandated [5] 16/7 19/22<br/> 42/13 43/4 108/20<br/> mandating [1] 190/4<br/> maneuver [8] 21/9 21/25<br/> 22/2 22/5 22/17 23/7<br/> 63/14 69/12<br/> maneuvers [2] 34/20<br/> 114/17<br/> manifested [1] 41/4<br/> manipulate [1] 43/16<br/> manipulation [4] 206/10<br/> 206/11 206/17 214/19<br/> manner [7] 78/9 96/2<br/> 102/1 105/6 177/5 214/1<br/> 217/7<br/> manual [7] 14/9 14/12 60/9<br/> 87/1 159/25 182/3 190/12<br/> manually [1] 75/2<br/> manuals [6] 29/3 74/6<br/> 161/2 164/4 190/10 255/11<br/> manufacture [1] 48/20<br/> manufactured [1] 200/6<br/> manufacturer [9] 9/17<br/> 10/2 10/18 47/11 47/24</p> | <p>March [13] 8/1 17/23 19/6<br/> 19/8 19/17 62/13 83/24<br/> 188/20 191/2 209/14<br/> 225/3 225/19 255/13<br/> March 10 [2] 62/13 83/24<br/> March 10th [1] 191/2<br/> March 10th of [1] 225/3<br/> March 11 [1] 255/13<br/> March 11th [1] 188/20<br/> March 31st [5] 8/1 17/23<br/> 19/6 19/8 19/17<br/> mark [23] 7/15 19/12 19/14<br/> 33/15 36/5 36/7 36/19<br/> 40/21 44/6 44/25 45/16<br/> 91/17 110/10 112/10 112/21<br/> 135/24 153/11 153/23<br/> 155/25 156/18 156/24<br/> 157/3 244/3<br/> marked [11] 7/20 31/16<br/> 31/17 33/9 33/11 39/10<br/> 39/17 39/19 53/5 57/11<br/> 57/12<br/> marketed [1] 200/6<br/> marketing [1] 63/13<br/> MARTIN [1] 2/23<br/> masks [1] 262/9<br/> massive [2] 139/11 139/12<br/> master [1] 73/9<br/> master's [1] 8/18<br/> matching [1] 70/20<br/> material [4] 32/15 42/10<br/> 56/6 182/5<br/> materialize [1] 83/7<br/> materializes [1] 202/14</p> |

|                                   |                                  |                                   |
|-----------------------------------|----------------------------------|-----------------------------------|
| <b>M</b>                          | 229/24 230/17 235/24             | 80/6 87/19 120/8 124/17           |
| <b>materially</b> [6] 28/5 28/9   | 244/22 245/12 253/11             | 125/21 132/5 147/19               |
| 96/16 101/3 108/16 133/10         | 254/9 257/15 257/15              | 150/14 152/7 154/10 161/14        |
| <b>materials</b> [18] 17/11 17/24 | <b>maybe</b> [21] 9/5 14/1 15/13 | 161/17 173/18 176/21              |
| 18/2 23/17 32/13 37/20            | 21/4 29/19 43/6 48/16            | 176/22 181/16 187/17              |
| 63/2 87/2 91/16 121/21            | 61/1 61/7 66/1 66/21             | 217/11 232/13 233/7               |
| 149/15 149/19 153/7               | 68/25 70/6 146/5 147/18          | 252/19 257/19                     |
| 235/17 235/19 236/11              | 158/6 158/11 161/14 167/20       | <b>meaning</b> [3] 24/9 72/1      |
| 238/21 240/1                      | 193/15 236/24                    | 188/6                             |
| <b>matter</b> [9] 8/1 69/18       | <b>MCAS</b> [323]                | <b>meaningful</b> [1] 215/19      |
| 173/10 185/11 200/7               | <b>MCAS 1.0</b> [1] 168/18       | <b>means</b> [6] 78/4 112/19      |
| 205/17 205/18 253/8               | <b>MCAS 2.0</b> [1] 97/19        | 130/9 159/2 202/21 211/22         |
| 262/7                             | <b>MCAS's</b> [17] 32/18 44/23   | <b>meant</b> [4] 92/7 95/23       |
| <b>matters</b> [6] 13/19 15/12    | 76/13 87/14 91/18 95/13          | 96/4 115/11                       |
| 28/13 150/7 150/7 235/8           | 96/21 99/3 106/1 106/8           | <b>Meanwhile</b> [1] 71/3         |
| <b>MAX</b> [61] 11/24 12/2 12/5   | 114/4 134/14 164/19 171/24       | <b>measure</b> [1] 24/15          |
| 12/18 14/4 15/3 18/13 20/7        | 186/15 187/12 221/8              | <b>meat</b> [1] 88/10             |
| 20/11 21/15 21/21 27/13           | <b>McGUIREWoods</b> [1] 2/17     | <b>mechanical</b> [1] 8/15        |
| 28/3 28/5 29/1 29/24 31/7         | <b>McNulty</b> [2] 205/23        | <b>meet</b> [2] 232/25 251/10     |
| 31/11 31/23 32/4 34/14            | 206/24                           | <b>meeting</b> [2] 128/25 210/14  |
| 45/3 47/19 53/21 54/7             | <b>me</b> [69] 6/6 8/24 12/9     | <b>meetings</b> [16] 10/17 35/11  |
| 54/14 56/10 56/12 58/25           | 15/25 16/3 22/17 29/20           | 35/12 36/5 36/20 49/4             |
| 60/21 61/7 62/4 62/14             | 29/21 43/6 61/2 64/3             | 107/2 107/12 107/23 108/6         |
| 63/16 74/4 75/22 87/1             | 65/19 66/6 68/24 69/6            | 108/13 108/17 108/23              |
| 87/15 99/7 103/21 118/7           | 71/4 81/17 81/17 91/20           | 176/4 176/16 209/20               |
| 119/9 123/13 125/24               | 92/3 92/7 99/25 101/10           | <b>Melvin</b> [1] 5/23            |
| 127/14 127/19 135/7 138/2         | 108/7 111/8 111/11 113/2         | <b>member</b> [1] 10/13           |
| 158/19 170/17 170/21              | 115/14 118/9 119/17 120/14       | <b>members</b> [2] 5/13 25/22     |
| 173/6 178/5 186/13 193/8          | 125/12 131/3 145/13 148/9        | <b>memorized</b> [1] 58/12        |
| 194/13 236/17 241/9               | 148/14 150/15 151/12 156/8       | <b>memory</b> [6] 111/23 158/21   |
| 241/11 241/12 249/6               | 159/15 165/25 167/11             | 159/2 159/3 159/6 190/3           |
| <b>MAXes</b> [2] 87/24 138/14     | 168/13 172/1 173/24 178/6        | <b>mental</b> [1] 28/14           |
| <b>maximum</b> [1] 190/8          | 178/7 183/17 185/23 187/6        | <b>mention</b> [6] 65/15 162/1    |
| <b>may</b> [40] 10/19 36/12       | 190/13 195/22 197/8              | 163/1 166/3 168/4 168/5           |
| 36/13 38/17 46/13 51/17           | 202/11 205/4 207/14              | <b>mentioned</b> [13] 11/23 12/17 |
| 54/19 60/1 84/18 107/24           | 212/7 213/21 215/5 216/14        | 15/1 23/6 30/4 32/11              |
| 110/5 111/22 119/12 134/16        | 226/20 231/16 232/20             | 48/15 49/24 70/5 71/14            |
| 146/22 171/23 178/7 178/8         | 233/19 235/5 243/10              | 97/13 149/3 208/15                |
| 184/21 191/7 191/7 196/4          | 243/17 250/1 252/19              | <b>mentioning</b> [3] 72/15 73/21 |
| 200/22 203/23 206/21              | <b>MEA</b> [1] 13/10             | 193/19                            |
| 206/21 206/22 212/25              | <b>mean</b> [28] 66/15 69/22     | <b>mere</b> [1] 253/1             |
| 214/23 220/9 227/23               | 72/20 74/13 74/15 79/16          | <b>merely</b> [1] 97/16           |

|                                 |                                    |                                  |
|---------------------------------|------------------------------------|----------------------------------|
| <b>M</b>                        | 191/18 196/18 196/20               | 142/22 191/23 252/19             |
| <b>message [5]</b> 61/4 167/17  | 196/20 196/20 196/21               | <b>moments [1]</b> 83/9          |
| 167/24 168/23 170/17            | 244/14                             | <b>MOMs [2]</b> 167/12 167/21    |
| <b>Messages [1]</b> 167/13      | <b>misconduct [2]</b> 225/25       | <b>monitoring [1]</b> 13/8       |
| <b>met [3]</b> 101/12 101/23    | 226/4                              | <b>month [1]</b> 257/21          |
| 150/8                           | <b>misleading [3]</b> 87/13        | <b>months [11]</b> 19/7 135/2    |
| <b>methodology [5]</b> 147/12   | 163/16 258/5                       | 158/9 172/11 198/25 199/6        |
| 147/17 148/13 148/25            | <b>misled [1]</b> 40/9             | 255/18 256/7 260/17              |
| 149/6                           | <b>misrepresenting [1]</b> 191/24  | 260/17 260/18                    |
| <b>Michael [1]</b> 5/20         | <b>misrepresents [1]</b> 135/5     | <b>Moore [3]</b> 5/18 5/19 6/24  |
| <b>middle [2]</b> 137/16 137/17 | <b>Miss [5]</b> 32/17 37/11 38/18  | <b>more [51]</b> 15/22 26/18     |
| <b>might [28]</b> 6/16 10/24    | 151/21 153/2                       | 27/5 30/10 40/16 41/19           |
| 17/16 21/13 21/16 27/3          | <b>Miss Klein [2]</b> 37/11 151/21 | 42/3 46/24 47/8 50/4             |
| 27/8 39/13 49/1 52/14           | <b>Miss Klein's [2]</b> 38/18      | 51/18 51/24 52/11 63/25          |
| 60/17 61/6 70/1 72/17           | 153/2                              | 71/20 71/21 105/14 105/16        |
| 73/13 73/14 82/11 110/16        | <b>Miss Stacey [1]</b> 32/17       | 116/12 129/15 140/22 151/9       |
| 159/12 180/11 190/22            | <b>missed [4]</b> 35/10 35/12      | 153/14 161/15 163/23 181/9       |
| 193/16 206/10 227/20            | 36/20 148/14                       | 191/18 192/6 192/7 195/22        |
| 227/21 238/18 253/2             | <b>missing [3]</b> 36/5 55/25      | 196/17 196/19 204/22             |
| 253/9                           | 146/1                              | 204/22 204/23 206/6              |
| <b>miles [3]</b> 26/17 26/21    | <b>misspoke [2]</b> 29/18 120/10   | 206/7 211/18 212/25              |
| 130/24                          | <b>misstate [1]</b> 159/15         | 229/4 231/18 240/18              |
| <b>Milleron [1]</b> 5/20        | <b>misstates [4]</b> 92/22 94/8    | 242/11 248/19 254/12             |
| <b>millions [4]</b> 42/12 42/12 | 105/18 133/2                       | 255/24 256/21 257/8              |
| 200/24 200/24                   | <b>mistake [2]</b> 191/25 252/10   | 260/9 260/17 260/20              |
| <b>mind [10]</b> 45/14 48/11    | <b>misunderstood [1]</b> 22/11     | <b>more-likely-than-not [1]</b>  |
| 58/15 59/9 149/21 151/18        | <b>mixing [2]</b> 104/9 130/14     | 256/21                           |
| 172/10 173/3 178/20             | <b>model [5]</b> 21/15 21/20       | <b>moreover [1]</b> 69/16        |
| 251/20                          | 47/16 161/8 239/7                  | <b>morning [6]</b> 50/13 78/22   |
| <b>mind-set [1]</b> 173/3       | <b>modern [1]</b> 160/23           | 85/19 85/20 98/6 137/17          |
| <b>mind-trick [1]</b> 58/15     | <b>modern-day [1]</b> 160/23       | <b>morning's [1]</b> 32/2        |
| <b>mind-tricks [1]</b> 59/9     | <b>modes [8]</b> 46/4 69/20        | <b>most [7]</b> 22/11 46/12      |
| <b>minded [2]</b> 120/25 121/10 | 74/10 127/3 175/19 175/20          | 49/13 54/22 85/6 123/16          |
| <b>mine [1]</b> 115/22          | 176/6 180/15                       | 204/10                           |
| <b>minimum [3]</b> 30/3 30/4    | <b>modifications [2]</b> 9/20      | <b>motion [14]</b> 27/20 27/22   |
| 30/24                           | 32/1                               | 36/22 109/12 110/22              |
| <b>minor [2]</b> 177/2 185/8    | <b>modified [1]</b> 30/16          | 110/23 110/24 111/9 196/8        |
| <b>minute [7]</b> 78/23 126/1   | <b>modified-type [1]</b> 30/16     | 196/24 196/25 226/18             |
| 131/15 168/13 243/15            | <b>MOM [6]</b> 168/6 168/9         | 236/7 236/11                     |
| 243/15 257/3                    | 168/14 169/8 170/5 170/13          | <b>motion-based [1]</b> 27/22    |
| <b>minutes [13]</b> 62/15 78/13 | <b>moment [9]</b> 43/2 49/24       | <b>motions [2]</b> 215/11 217/14 |
| 81/22 82/15 131/17 191/8        | 50/12 68/17 74/14 126/2            | <b>motivated [1]</b> 42/3        |



|   |   |   |
|---|---|---|
| <p><b>M</b></p> <p><b>motivation [1]</b> 43/15</p> <p><b>motive [1]</b> 41/23</p> <p><b>mouth [2]</b> 166/9 233/9</p> <p><b>movant's [5]</b> 86/23 100/8 100/8 136/24 226/18</p> <p><b>movants [12]</b> 2/3 204/4 218/8 225/24 226/2 226/13 232/14 232/14 232/17 234/2 257/1 258/17</p> <p><b>move [7]</b> 8/3 32/7 38/8 41/2 59/3 155/22 158/3</p> <p><b>moved [1]</b> 81/16</p> <p><b>moving [4]</b> 126/7 141/24 231/13 232/8</p> <p><b>Mr [15]</b> 3/5 3/6 3/7 3/8 3/10 3/11 3/12 3/13 3/14 4/4 4/18 92/3 136/5 191/22 238/4</p> <p><b>Mr. [119]</b> 19/12 37/15 38/17 40/3 42/10 45/10 56/19 57/1 57/5 61/5 61/13 61/25 92/7 94/24 96/9 96/20 98/24 103/13 104/1 104/1 104/10 104/18 104/22 105/23 106/7 106/10 106/11 106/15 106/16 106/23 107/4 113/2 113/11 113/14 113/19 113/25 114/4 114/8 115/9 117/12 117/25 118/5 118/19 119/9 119/15 119/16 120/13 120/20 121/18 121/22 122/12 122/20 122/21 124/22 124/25 125/3 129/13 129/17 129/25 129/25 131/11 131/22 132/4 132/7 133/24 134/8 134/22 135/20 136/2 136/10 143/16 144/1 147/10 148/17 149/15 149/24</p> | <p>150/2 150/8 150/11 150/16 150/18 150/24 151/14 154/12 156/2 181/2 181/8 186/8 187/14 188/23 188/24 196/19 208/7 208/12 212/6 212/6 216/11 220/16 220/21 221/4 224/17 225/24 226/3 226/9 230/11 231/5 231/23 233/21 235/11 236/9 238/6 239/17 239/22 241/19 241/21 242/20 254/15 254/19 255/3</p> <p><b>Mr. Cassell [13]</b> 37/15 38/17 45/10 147/10 148/17 149/15 150/16 154/12 156/2 181/2 196/19 239/22 242/20</p> <p><b>Mr. Duffy [2]</b> 233/21 235/11</p> <p><b>Mr. Forkner [73]</b> 56/19 57/1 57/5 61/5 61/13 61/25 92/7 94/24 96/20 98/24 103/13 104/1 104/10 104/18 104/22 105/23 106/7 106/10 106/11 106/15 106/16 106/23 107/4 113/2 113/11 113/14 113/19 113/25 114/4 115/9 117/12 117/25 118/5 118/19 119/9 119/15 119/16 120/13 120/20 121/18 121/22 122/12 122/20 122/21 124/22 124/25 125/3 129/13 129/17 129/25 131/11 132/4 132/7 133/24 134/8 134/22 135/20 143/16 144/1 181/8 186/8 187/14 208/7 212/6 216/11 220/16 220/21 221/4 224/17 226/9 230/11 231/5</p> | <p>231/23</p> <p><b>Mr. Forkner's [4]</b> 42/10 96/9 225/24 226/3</p> <p><b>Mr. Gustavsson [4]</b> 104/1 114/8 129/25 212/6</p> <p><b>Mr. Hatch [3]</b> 188/24 254/15 254/19</p> <p><b>Mr. Jacobs [6]</b> 131/22 188/23 239/17 241/19 241/21 255/3</p> <p><b>Mr. Jacobs' [1]</b> 40/3</p> <p><b>Mr. Keyes [4]</b> 149/24 150/2 150/8 238/6</p> <p><b>Mr. Keyes' [5]</b> 150/11 150/18 150/24 151/14 236/9</p> <p><b>Mr. Loffing [3]</b> 136/2 136/10 208/12</p> <p><b>Mr. Mark [1]</b> 19/12</p> <p><b>Ms [1]</b> 255/22</p> <p><b>Ms. [11]</b> 40/9 40/12 40/15 40/16 44/17 81/7 108/18 153/11 153/22 230/21 255/24</p> <p><b>Ms. Klein [5]</b> 40/9 40/12 40/16 230/21 255/24</p> <p><b>Ms. Klein's [5]</b> 40/15 44/17 108/18 153/11 153/22</p> <p><b>Ms. Norton [1]</b> 81/7</p> <p><b>much [22]</b> 49/14 50/9 60/2 77/23 77/24 107/2 116/19 118/7 129/12 144/4 163/23 167/5 172/15 186/9 187/23 219/8 233/5 233/12 241/21 251/19 252/10 260/16</p> <p><b>Multi [4]</b> 167/13 167/17 167/24 168/23</p> <p><b>Multi-Operator [4]</b> 167/13 167/17 167/24 168/23</p> <p><b>multimillion [4]</b> 27/19 42/5</p> |
|---|---|---|

|  |   |   |
|--|---|---|
| <p><b>M</b></p> <p><b>multimillion...</b> [2] 92/5<br/>116/15</p> <p><b>multimillion-dollar</b> [4]<br/>27/19 42/5 92/5 116/15</p> <p><b>multiple</b> [9] 11/14 57/24<br/>73/16 133/16 134/19 217/6<br/>217/17 219/22 235/11</p> <p><b>multiplies</b> [1] 252/25</p> <p><b>must</b> [6] 14/7 14/11 132/22<br/>137/18 159/6 244/9</p> <p><b>my</b> [202] 10/1 10/6 11/25<br/>12/15 13/6 13/15 16/1 16/9<br/>16/12 16/20 20/4 20/8<br/>21/7 22/6 22/15 22/21<br/>25/7 25/14 25/21 27/14<br/>28/7 30/3 30/10 30/21<br/>31/8 32/16 32/25 33/16<br/>33/24 35/8 37/11 39/14<br/>39/16 40/23 40/24 40/25<br/>42/2 42/7 42/9 42/9 44/2<br/>44/3 44/9 44/9 44/15<br/>44/16 44/18 44/19 45/14<br/>47/9 47/12 48/11 48/14<br/>49/10 49/22 49/22 50/8<br/>51/1 52/5 55/14 57/7<br/>59/19 59/22 61/16 61/21<br/>62/9 63/17 65/14 67/3<br/>70/18 74/20 75/1 77/7<br/>77/13 77/23 78/6 82/3<br/>82/5 82/21 84/4 86/1 86/6<br/>86/18 86/18 88/4 89/3<br/>91/2 91/5 91/22 93/1 94/2<br/>94/22 95/15 96/1 97/14<br/>97/22 99/17 100/5 104/21<br/>106/9 108/7 108/19 108/24<br/>111/4 114/16 115/24 116/6<br/>116/12 120/1 120/2 122/14<br/>125/8 126/14 128/13 132/4<br/>136/3 136/23 137/16<br/>140/10 141/9 143/7 144/19<br/>145/18 146/3 147/13</p> | <p>147/20 147/23 148/1 149/3<br/>149/8 149/9 149/18 150/6<br/>150/23 151/2 151/10 151/13<br/>151/18 152/9 152/10 152/12<br/>152/25 153/1 159/15<br/>162/14 163/9 164/5 164/11<br/>164/22 165/10 166/2<br/>166/21 167/19 168/4 168/9<br/>168/12 168/12 168/22<br/>169/19 170/15 171/19<br/>172/24 173/4 174/3 175/16<br/>176/3 177/4 178/10 178/20<br/>181/17 181/17 182/17 183/3<br/>184/2 184/18 184/18 186/7<br/>186/24 188/12 190/18<br/>191/25 192/20 192/24<br/>193/12 194/19 194/20<br/>195/18 195/21 197/10<br/>203/25 206/16 206/18<br/>210/5 213/1 220/3 220/9<br/>233/19 243/17 244/12<br/>245/2 262/7 262/11</p> <p><b>myriad</b> [1] 152/24</p> <p><b>myself</b> [12] 13/2 22/2<br/>26/6 26/9 27/2 28/25<br/>42/7 57/25 108/15 128/15<br/>162/25 234/25</p> <hr/> <p><b>N</b></p> <p><b>N-o-r-t-o-n</b> [1] 7/10</p> <p><b>Nadia</b> [1] 5/20</p> <p><b>Naheed</b> [1] 5/24</p> <p><b>name</b> [6] 7/8 7/9 144/19<br/>162/10 166/11 202/11</p> <p><b>names</b> [1] 45/10</p> <p><b>narrow</b> [9] 98/16 102/18<br/>102/19 102/20 103/1<br/>103/10 114/19 128/24<br/>170/3</p> <p><b>national</b> [1] 54/23</p> <p><b>Nationwide</b> [1] 250/4</p> <p><b>naturally</b> [2] 120/24 253/1</p> <p><b>nature</b> [2] 182/11 212/21</p> | <p><b>near</b> [1] 96/7</p> <p><b>necessarily</b> [7] 98/7 128/11<br/>176/17 193/10 215/24<br/>228/7 234/20</p> <p><b>necessary</b> [7] 10/10 88/18<br/>179/8 195/15 197/3 197/19<br/>245/25</p> <p><b>necessity</b> [1] 161/9</p> <p><b>need</b> [30] 17/15 17/16<br/>23/18 35/9 35/18 41/25<br/>43/2 52/22 60/1 61/6<br/>92/24 94/19 107/10<br/>122/23 131/18 133/6<br/>165/24 174/18 191/8 191/16<br/>203/17 203/19 216/19<br/>228/25 229/10 229/22<br/>237/7 244/11 250/25<br/>251/3</p> <p><b>needed</b> [8] 10/22 24/22<br/>56/10 129/15 130/17 168/1<br/>194/13 203/8</p> <p><b>needing</b> [1] 56/20</p> <p><b>needs</b> [2] 62/4 202/2</p> <p><b>negative</b> [1] 90/1</p> <p><b>negligent</b> [1] 105/12</p> <p><b>neither</b> [5] 16/17 65/11<br/>192/25 240/21 249/17</p> <p><b>neutral</b> [1] 159/18</p> <p><b>never</b> [20] 22/16 26/25<br/>98/12 98/15 150/8 170/9<br/>175/7 175/10 178/6 181/22<br/>181/25 182/10 184/5<br/>184/23 194/18 195/13<br/>222/21 242/23 251/13<br/>255/16</p> <p><b>nevertheless</b> [1] 222/8</p> <p><b>new</b> [8] 1/20 2/8 2/8 9/19<br/>14/7 19/8 26/16 75/13</p> <p><b>newly</b> [1] 30/16</p> <p><b>news</b> [4] 214/13 218/11<br/>220/1 220/2</p> <p><b>next</b> [20] 30/6 39/10</p> |
|--|---|---|

|                                |                                  |                                  |
|--------------------------------|----------------------------------|----------------------------------|
| <b>N</b>                       | 240/11 241/5 241/21              | 140/13 140/24 142/24             |
| <b>next...</b> [18] 47/16 72/1 | 241/21 241/24 242/1              | 144/17 144/25 148/3              |
| 72/4 84/14 126/24 128/16       | 242/10 242/11 242/11             | 162/21 163/15 164/24             |
| 141/4 160/17 168/20            | 242/16 242/19 243/11             | 183/11 184/5 185/9 185/19        |
| 169/22 177/21 181/20           | 244/24 247/20 247/22             | 192/7 198/9 198/16 199/12        |
| 192/15 193/4 197/16            | 248/22 249/15 249/17             | 199/23 201/14 238/5              |
| 203/15 213/20 223/6            | 250/16 257/6 257/6 261/1         | 239/6 239/14 242/3 242/8         |
| <b>NG</b> [3] 23/3 53/21 58/24 | <b>No.</b> [3] 156/9 165/8 165/8 | 243/24 247/18 248/5              |
| <b>nil</b> [1] 175/20          | <b>No.</b> 14 [1] 156/9          | 249/18 250/17 256/16             |
| <b>nine</b> [2] 18/23 260/17   | <b>No.</b> 4 [2] 165/8 165/8     | 258/3                            |
| <b>Njoroge</b> [1] 5/15        | <b>nobody</b> [3] 106/7 130/24   | <b>Norton's</b> [5] 4/16 8/4     |
| <b>no</b> [133] 1/6 6/22 11/20 | 230/23                           | 37/20 248/9 248/15               |
| 30/23 34/25 35/11 57/3         | <b>noncausal</b> [1] 237/5       | <b>nose</b> [38] 22/7 22/8 22/8  |
| 60/8 61/17 63/6 63/18          | <b>nondisclosure</b> [1] 237/15  | 22/18 68/4 69/11 71/24           |
| 69/16 70/1 70/23 71/11         | <b>none</b> [4] 132/11 237/1     | 72/5 74/14 74/21 75/1            |
| 71/12 72/11 72/12 72/12        | 242/22 245/25                    | 88/12 89/10 89/17 89/23          |
| 72/25 77/16 77/16 77/16        | <b>nonfull</b> [1] 237/4         | 89/24 95/7 95/24 101/6           |
| 79/4 81/23 88/21 95/3          | <b>nonfull-flight</b> [1] 237/4  | 101/19 102/4 103/1 103/2         |
| 98/5 98/5 99/10 100/21         | <b>nonnormal</b> [1] 142/4       | 106/18 113/21 118/10             |
| 105/25 106/13 106/19           | <b>Noormohamed</b> [2] 5/24      | 125/23 131/17 139/16             |
| 110/4 112/24 115/18 119/7      | 5/25                             | 163/2 163/3 169/3 169/23         |
| 126/4 128/1 128/21 129/7       | <b>nor</b> [6] 37/19 69/19       | 187/4 221/1 228/9 231/13         |
| 130/14 132/15 137/19           | 164/20 240/13 248/6              | 232/8                            |
| 140/3 140/11 140/13 140/18     | 248/6                            | <b>nose-down</b> [3] 71/24 169/3 |
| 140/19 142/13 142/15           | <b>normal</b> [14] 22/4 26/6     | 169/23                           |
| 143/8 143/19 144/3 146/3       | 42/7 69/9 73/14 77/15            | <b>nose-high</b> [2] 22/7 22/18  |
| 148/15 151/18 153/4 158/5      | 77/15 78/7 84/16 84/24           | <b>not</b> [292]                 |
| 160/24 163/8 164/2             | 116/16 139/22 188/3              | <b>not been</b> [1] 83/13        |
| 166/23 170/3 172/1 172/10      | 222/20                           | <b>note</b> [9] 38/8 41/2 41/9   |
| 179/4 180/19 180/19 183/6      | <b>normally</b> [4] 22/3 73/14   | 45/8 79/5 109/8 190/23           |
| 183/8 184/11 185/1 185/19      | 139/19 160/3                     | 214/6 259/1                      |
| 187/19 189/4 190/5 193/4       | <b>NORTHERN</b> [2] 1/2          | <b>noted</b> [2] 19/5 253/24     |
| 196/8 196/14 196/16            | 262/18                           | <b>notes</b> [2] 86/18 159/15    |
| 196/17 196/19 199/18           | <b>NORTON</b> [66] 3/4 5/9 7/1   | <b>noteworthy</b> [6] 60/8 60/11 |
| 201/2 211/5 212/15 216/5       | 7/8 7/10 7/22 37/18 38/5         | 62/25 63/4 63/6 256/5            |
| 216/5 217/15 218/21 219/5      | 81/7 85/15 85/19 85/21           | <b>nothing</b> [20] 57/2 77/21   |
| 219/16 221/12 221/19           | 86/22 90/9 98/22 99/20           | 89/13 97/6 97/8 97/10            |
| 224/12 225/6 225/11            | 100/1 105/10 109/2 110/8         | 118/3 120/6 131/10 133/10        |
| 225/15 227/3 232/24            | 112/5 114/12 116/21 117/15       | 133/19 155/8 196/2 196/3         |
| 233/10 233/12 237/2            | 121/4 121/16 124/7 127/12        | 200/18 220/14 228/1              |
| 237/17 237/24 238/8            | 128/1 128/5 129/24 133/1         | 247/5 255/5 258/9                |
| 238/11 238/13 240/2            | 136/18 136/24 140/11             | <b>notice</b> [13] 9/21 10/25    |

|  |  |   |
|--|--|---|
| <p><b>N</b><br/> <b>notice...</b> [11] 18/11 19/23<br/> 20/22 23/11 54/8 60/22<br/> 65/25 226/21 226/22<br/> 226/23 227/2<br/> <b>noticed</b> [6] 10/12 13/9<br/> 15/5 17/22 47/16 48/19<br/> <b>notification</b> [1] 188/19<br/> <b>noting</b> [1] 66/1<br/> <b>notion</b> [1] 64/12<br/> <b>November</b> [7] 112/9 114/5<br/> 167/9 207/3 232/1 238/22<br/> 240/2<br/> <b>November 15</b> [1] 114/5<br/> <b>November 15th</b> [2] 112/9<br/> 207/3<br/> <b>now</b> [105] 9/21 10/12<br/> 10/24 13/24 15/5 15/25<br/> 17/10 18/22 19/5 20/19<br/> 25/5 26/13 27/24 28/12<br/> 30/12 31/1 32/11 33/21<br/> 36/3 36/16 39/9 41/19<br/> 43/1 44/21 46/19 46/21<br/> 51/8 52/6 53/5 53/17<br/> 55/16 56/6 58/9 59/10<br/> 60/15 61/8 62/10 62/12<br/> 63/23 65/5 67/6 71/14<br/> 72/4 73/21 74/3 82/18<br/> 83/15 83/17 86/22 87/9<br/> 88/10 89/25 90/1 97/15<br/> 103/25 104/6 104/23<br/> 105/6 109/5 109/16 112/16<br/> 113/4 113/11 113/25 116/12<br/> 118/16 123/20 126/2<br/> 126/15 127/1 130/24<br/> 133/25 135/19 135/23<br/> 136/23 140/16 147/6<br/> 162/25 164/7 168/10<br/> 177/11 179/7 186/17<br/> 188/23 191/6 194/9 199/20<br/> 213/21 224/8 231/21<br/> 232/4 235/10 244/7</p> | <p>244/22 247/3 247/24<br/> 248/3 250/24 252/9<br/> 254/14 256/3 256/18<br/> 256/25 258/7 260/20<br/> <b>nowhere</b> [7] 91/11 93/11<br/> 94/2 95/11 96/19 113/18<br/> 180/7<br/> <b>number</b> [17] 34/3 68/25<br/> 79/19 109/5 117/9 118/25<br/> 138/13 148/1 165/3 165/11<br/> 186/18 197/21 216/11<br/> 227/8 243/20 249/24<br/> 250/5<br/> <b>number two's</b> [1] 216/11<br/> <b>numbered</b> [1] 18/6<br/> <b>numbers</b> [2] 11/12 156/9<br/> <b>numeral</b> [1] 137/2<br/> <b>numerous</b> [9] 12/23 13/6<br/> 20/23 51/15 68/2 68/7<br/> 70/15 72/19 90/13<br/> <b>NW</b> [2] 1/20 2/21</p> <hr/> <p><b>O</b><br/> <b>O'CONNOR</b> [5] 1/14 151/6<br/> 153/10 154/22 155/5<br/> <b>oath</b> [2] 6/4 32/18<br/> <b>object</b> [14] 37/17 38/24<br/> 59/5 79/5 123/15 133/1<br/> 180/6 214/1 216/5 217/9<br/> 234/9 235/7 236/6 244/10<br/> <b>objecting</b> [1] 6/19<br/> <b>objection</b> [17] 7/4 38/9<br/> 41/9 41/14 92/21 94/7<br/> 105/17 116/25 121/20<br/> 122/8 132/21 153/13 177/11<br/> 183/13 207/13 207/16<br/> 244/15<br/> <b>objections</b> [7] 128/1<br/> 235/10 244/16 245/4<br/> 246/2 259/2 259/3<br/> <b>obligations</b> [1] 75/15<br/> <b>observation</b> [4] 49/10<br/> 49/19 50/2 52/5</p> | <p><b>observations</b> [1] 155/9<br/> <b>observe</b> [3] 47/4 49/7<br/> 50/20<br/> <b>observed</b> [2] 52/2 52/10<br/> <b>observing</b> [1] 52/1<br/> <b>obstruct</b> [1] 64/1<br/> <b>obstructed</b> [2] 45/1 46/7<br/> <b>obstructing</b> [2] 28/19 46/9<br/> <b>obtain</b> [1] 61/14<br/> <b>obtaining</b> [1] 195/21<br/> <b>obvious</b> [5] 46/13 47/20<br/> 200/21 249/11 254/8<br/> <b>obviously</b> [9] 9/23 54/15<br/> 69/13 71/19 127/1 201/24<br/> 202/2 215/10 254/24<br/> <b>occasion</b> [2] 47/1 60/17<br/> <b>occasionally</b> [1] 49/3<br/> <b>occur</b> [4] 69/25 166/13<br/> 240/15 261/4<br/> <b>occurred</b> [13] 16/18 36/13<br/> 65/11 84/7 93/20 155/17<br/> 178/8 206/11 209/15<br/> 234/25 238/16 241/8<br/> 241/8<br/> <b>occurrence</b> [5] 46/12 47/8<br/> 108/21 194/17 253/1<br/> <b>occurring</b> [2] 80/4 195/9<br/> <b>October</b> [12] 59/14 83/1<br/> 137/6 137/11 137/14 137/18<br/> 137/20 137/23 157/15<br/> 225/1 225/2 231/19<br/> <b>October 29</b> [1] 59/14<br/> <b>October 29th</b> [3] 83/1<br/> 137/14 225/1<br/> <b>October 29th of</b> [2] 137/6<br/> 225/2<br/> <b>off</b> [19] 14/25 42/7 68/13<br/> 68/15 71/4 72/24 74/5<br/> 74/23 83/2 83/25 129/4<br/> 142/14 142/15 142/18<br/> 145/4 159/23 161/9 216/2<br/> 222/17</p> |
|--|--|---|



|                                    |                                 |                                    |
|------------------------------------|---------------------------------|------------------------------------|
| <b>O</b>                           | 161/16 162/21 164/14            | 131/24 133/23 134/22               |
| <b>offense [1]</b> 35/11           | 165/17 165/20 165/22            | 135/5 136/6 139/1 140/18           |
| <b>offer [6]</b> 20/2 20/4 49/15   | 166/9 167/6 167/23              | 142/22 143/22 144/25               |
| 106/25 153/10 183/11               | 170/24 172/20 172/25            | 147/4 149/1 151/10 161/25          |
| <b>offered [6]</b> 37/15 55/5      | 173/13 173/16 175/7             | 163/7 167/23 178/18 185/6          |
| 62/8 65/2 76/18 242/19             | 175/13 178/22 179/5             | 185/8 188/20 190/21                |
| <b>offering [12]</b> 16/1 16/24    | 179/13 179/23 180/8             | 191/22 191/23 194/3 195/11         |
| 18/8 40/6 40/22 42/24              | 180/20 182/13 183/5 183/9       | 195/25 196/23 199/14               |
| 52/19 55/3 56/17 64/24             | 185/6 185/17 191/5 191/10       | 201/11 206/12 207/8 212/8          |
| 151/6 178/24                       | 191/13 191/17 191/20 192/4      | 213/12 213/23 215/12               |
| <b>office [8]</b> 99/4 99/7 99/12  | 196/4 196/17 207/19             | 215/15 215/22 216/8 216/9          |
| 111/11 175/8 177/9 178/4           | 233/13 234/23 261/7             | 217/1 217/13 219/19                |
| 230/9                              | <b>older [2]</b> 157/25 158/5   | 219/25 224/17 224/21               |
| <b>officer [6]</b> 13/3 13/7 73/11 | <b>omission [3]</b> 86/25 87/12 | 232/3 234/11 235/7                 |
| 157/21 193/1 193/16                | 253/9                           | 236/23 238/3 238/8                 |
| <b>offices [2]</b> 2/10 177/13     | <b>omission/lack [1]</b> 87/12  | 238/16 240/2 240/8                 |
| <b>official [2]</b> 42/17 262/18   | <b>omitted [1]</b> 130/7        | 241/24 242/4 243/6 248/3           |
| <b>officials [1]</b> 123/12        | <b>on [332]</b>                 | 248/13 250/1 251/17                |
| <b>often [3]</b> 11/7 116/8 252/9  | <b>on board [3]</b> 85/2 87/24  | 255/13 256/11 258/23               |
| <b>oh [13]</b> 17/19 38/14 67/3    | 140/23                          | 259/8                              |
| 112/16 112/19 113/11 130/9         | <b>onboard [3]</b> 59/15 62/16  | <b>one-day [1]</b> 206/12          |
| 140/3 165/6 165/10 196/14          | 74/7                            | <b>one-liner [1]</b> 178/18        |
| 231/9 258/7                        | <b>once [19]</b> 27/21 84/23    | <b>one-size-fits-all [1]</b> 163/7 |
| <b>okay [112]</b> 5/4 5/10 6/3     | 89/14 100/25 110/18 111/7       | <b>one-way [1]</b> 161/25          |
| 6/11 7/4 33/20 34/6 35/20          | 116/5 119/13 134/4 135/5        | <b>one-week [1]</b> 167/23         |
| 37/21 39/2 39/25 53/13             | 156/16 158/24 159/6 195/2       | <b>ones [2]</b> 51/25 115/5        |
| 58/5 65/15 78/14 78/21             | 200/4 200/23 220/1              | <b>ongoing [5]</b> 145/19 171/8    |
| 78/24 79/2 79/12 79/25             | 256/25 258/2                    | 189/21 255/9 255/10                |
| 80/22 81/2 81/8 81/10              | <b>one [118]</b> 9/8 9/9 11/11  | <b>only [71]</b> 11/11 11/15 11/17 |
| 95/6 95/20 100/5 103/2             | 11/18 16/21 18/15 18/16         | 26/17 41/3 47/22 49/10             |
| 105/19 109/25 111/6 112/3          | 21/4 22/9 26/12 26/15           | 56/9 56/20 61/18 68/5              |
| 112/5 112/7 113/14 117/19          | 28/9 28/16 29/22 40/2           | 71/5 83/16 92/18 93/5              |
| 128/17 131/4 137/3 137/4           | 40/14 41/19 44/25 45/13         | 95/17 96/12 97/5 98/8              |
| 137/15 137/21 144/7 144/11         | 45/16 48/24 51/18 53/9          | 98/18 98/25 99/13 103/22           |
| 145/11 146/5 146/11 147/16         | 55/17 55/17 66/17 66/21         | 106/3 108/6 108/19 113/15          |
| 148/16 148/25 149/11               | 72/14 73/5 73/10 73/11          | 118/15 120/19 122/8 123/18         |
| 149/14 149/20 149/22               | 77/2 84/20 90/25 91/7           | 126/23 128/24 129/16               |
| 150/11 150/21 151/4 151/20         | 91/12 93/12 94/4 95/4           | 130/3 130/20 132/19 134/7          |
| 152/4 153/9 155/11 156/13          | 95/12 96/13 96/16 98/14         | 134/8 134/13 135/4 135/16          |
| 156/17 156/20 156/23               | 103/15 104/25 105/8 107/4       | 152/1 153/14 172/20                |
| 157/5 157/22 158/2 158/17          | 112/24 113/11 121/18            | 174/24 176/23 176/25               |
| 159/1 159/14 160/9 161/16          | 122/24 124/19 126/15            | 181/9 184/17 185/4 187/20          |

|  |   |   |
|--|---|---|
| <p><b>O</b><br/> <b>only...</b> [19] 187/24 188/24<br/> 194/3 194/7 197/11 203/13<br/> 208/2 208/5 208/8 210/17<br/> 211/21 212/8 221/7 231/22<br/> 232/14 241/15 244/1<br/> 253/19 257/12<br/> <b>onto</b> [2] 52/11 88/1<br/> <b>oOo</b> [1] 5/3<br/> <b>open</b> [2] 67/20 67/24<br/> <b>open-ended</b> [2] 67/20<br/> 67/24<br/> <b>opened</b> [1] 123/16<br/> <b>opens</b> [2] 26/24 72/10<br/> <b>operate</b> [21] 11/15 11/17<br/> 14/20 14/25 37/4 92/5<br/> 92/20 96/16 107/3 107/15<br/> 107/19 128/19 128/24<br/> 134/9 135/13 157/14<br/> 175/23 184/19 224/14<br/> 224/18 231/22<br/> <b>operated</b> [4] 11/19 157/19<br/> 158/6 229/25<br/> <b>operates</b> [2] 22/8 22/24<br/> <b>operating</b> [27] 14/12 20/9<br/> 21/5 21/8 34/13 46/4<br/> 70/24 76/9 83/8 91/25<br/> 98/16 102/21 103/1 105/24<br/> 115/12 119/23 120/6 121/9<br/> 128/25 148/1 157/16<br/> 168/15 170/3 182/4 185/25<br/> 186/4 221/14<br/> <b>operation</b> [3] 77/15 77/15<br/> 135/7<br/> <b>operational</b> [20] 13/2<br/> 20/24 21/1 23/13 25/6<br/> 25/10 25/12 25/23 28/20<br/> 44/24 56/11 75/14 75/16<br/> 94/11 98/2 171/24 187/12<br/> 187/15 189/13 208/21<br/> <b>operations</b> [4] 26/7 64/2<br/> 186/15 190/12</p> | <p><b>operator</b> [11] 29/1 48/24<br/> 151/16 163/9 163/21 167/25<br/> 167/13 167/17 167/24<br/> 168/23 170/6<br/> <b>operators</b> [6] 49/4 104/6<br/> 124/17 124/19 162/24<br/> 168/6<br/> <b>opine</b> [1] 195/23<br/> <b>opining</b> [1] 199/13<br/> <b>opinion</b> [100] 16/5 16/9<br/> 16/10 16/12 16/13 16/20<br/> 17/11 19/19 19/23 20/8<br/> 29/16 30/3 30/21 32/11<br/> 32/16 35/8 37/12 40/22<br/> 40/23 40/24 40/25 43/7<br/> 44/2 44/3 44/10 44/15<br/> 44/19 46/20 48/1 48/5<br/> 48/18 49/22 50/7 52/19<br/> 55/4 60/4 62/9 65/6 65/7<br/> 65/13 65/14 65/15 65/17<br/> 67/8 75/10 76/7 76/18<br/> 77/13 82/21 85/24 86/23<br/> 86/24 95/15 105/12<br/> 106/25 108/19 121/13<br/> 122/19 125/8 132/4 146/3<br/> 149/4 149/8 151/7 153/9<br/> 153/21 154/5 155/2 164/1<br/> 164/12 164/14 164/15<br/> 164/17 166/1 168/9 178/21<br/> 179/25 180/2 180/9<br/> 180/20 181/10 181/17<br/> 183/12 183/24 184/2 186/6<br/> 186/7 192/14 197/22<br/> 198/11 204/3 204/6 216/17<br/> 216/19 227/4 233/24<br/> 235/16 235/21 249/7<br/> 258/20<br/> <b>opinions</b> [42] 16/1 16/3<br/> 16/4 16/24 18/8 20/2<br/> 20/20 32/14 35/7 40/5<br/> 42/23 44/16 55/2 56/16<br/> 62/7 64/24 67/7 85/22</p> | <p>147/12 147/13 147/20<br/> 148/5 148/9 150/6 151/6<br/> 155/9 178/24 179/3<br/> 183/20 195/16 217/18<br/> 220/3 235/14 237/10<br/> 240/22 240/25 241/2<br/> 242/19 248/11 248/13<br/> 249/25 250/2<br/> <b>opponent</b> [1] 257/2<br/> <b>opportunity</b> [7] 37/16<br/> 76/13 110/20 127/9 128/3<br/> 131/15 164/24<br/> <b>opposed</b> [1] 106/22<br/> <b>opposing</b> [5] 7/17 21/19<br/> 31/15 57/14 147/3<br/> <b>opposite</b> [4] 86/10 86/11<br/> 86/14 199/20<br/> <b>opposition</b> [1] 62/1<br/> <b>or</b> [265]<br/> <b>oral</b> [3] 14/15 84/19 111/25<br/> <b>orange</b> [1] 66/18<br/> <b>oranges</b> [3] 104/9 104/15<br/> 130/14<br/> <b>order</b> [13] 24/23 30/24<br/> 43/23 54/7 73/18 175/14<br/> 175/25 198/14 206/3<br/> 208/1 239/11 239/11 243/8<br/> <b>ordered</b> [22] 27/8 27/12<br/> 27/17 29/14 29/17 30/2<br/> 31/2 32/12 32/19 33/3<br/> 38/1 44/7 44/13 195/24<br/> 198/4 198/8 198/21 199/1<br/> 199/8 236/16 237/10<br/> 241/3<br/> <b>ordering</b> [1] 32/3<br/> <b>orders</b> [2] 239/3 239/4<br/> <b>ordinary</b> [3] 78/5 222/20<br/> 253/8<br/> <b>organization</b> [4] 50/25<br/> 120/25 121/11 249/15<br/> <b>original</b> [4] 21/5 21/7<br/> 24/23 170/1</p> |
|--|---|---|

|   |  |  |
|---|--|--|
| <p><b>O</b></p> <p><b>originally</b> [11] 23/22 24/1 24/11 24/25 87/21 96/12 100/21 229/25 236/17 240/17 241/1</p> <p><b>oscillating</b> [1] 84/16</p> <p><b>oscillations</b> [1] 84/23</p> <p><b>OSD</b> [1] 58/7</p> <p><b>other</b> [93] 7/3 10/9 15/7 22/10 32/1 48/2 48/21 52/2 58/14 59/9 62/11 62/18 64/12 73/5 77/2 78/23 79/4 81/3 81/8 86/17 88/17 88/23 91/12 91/18 94/16 95/2 95/4 96/15 101/2 105/7 112/23 113/6 113/19 120/20 123/20 125/6 127/7 131/4 131/11 133/24 135/18 141/22 149/14 149/19 151/13 157/1 159/12 162/18 162/25 184/20 189/6 196/6 196/8 200/15 200/22 201/1 201/3 201/5 206/22 208/2 208/5 208/5 208/8 208/16 209/9 211/7 213/16 213/22 213/22 214/15 219/10 221/23 223/18 228/7 228/17 230/5 231/9 233/15 234/10 234/14 234/15 235/8 235/21 237/21 238/1 238/2 240/10 240/19 242/14 250/16 251/1 255/5 256/11</p> <p><b>others</b> [8] 110/25 136/7 177/8 199/15 201/23 202/21 204/24 258/6</p> <p><b>otherwise</b> [4] 215/17 215/18 217/19 219/17</p> <p><b>our</b> [55] 6/20 6/23 11/13 11/19 12/14 14/15 27/24</p> | <p>29/2 34/20 35/24 41/9 48/24 48/25 49/4 52/22 78/22 102/20 109/18 109/19 109/24 110/21 110/25 111/25 115/25 116/1 128/3 157/25 158/5 161/2 167/21 182/4 182/20 187/23 196/8 197/14 197/15 198/17 202/7 202/8 209/3 210/17 211/5 217/13 217/13 219/12 233/6 244/20 244/24 246/22 251/5 253/24 253/25 256/18 258/25 259/2</p> <p><b>ours</b> [1] 51/17</p> <p><b>out</b> [68] 9/17 14/20 15/22 16/3 30/22 61/8 70/3 71/25 72/7 73/17 74/20 74/25 77/15 78/5 78/7 84/17 86/2 89/12 89/20 93/8 107/5 108/13 113/8 114/9 118/2 131/5 139/19 140/1 140/2 140/4 151/11 151/17 160/1 160/15 162/1 167/1 167/16 170/5 174/3 178/16 183/20 188/1 189/7 189/13 192/7 192/23 197/21 199/21 200/17 209/11 210/6 218/7 224/16 232/23 233/22 235/11 247/4 250/11 251/11 256/24 257/22 257/22 258/4 259/25 260/5 260/15 260/23 261/9</p> <p><b>out to</b> [1] 140/4</p> <p><b>outcome</b> [2] 204/21 205/10</p> <p><b>outcomes</b> [1] 46/11</p> <p><b>outer</b> [1] 83/7</p> <p><b>outline</b> [2] 79/17 190/5</p> <p><b>outlined</b> [1] 162/5</p> <p><b>outlines</b> [1] 173/20</p> | <p><b>outset</b> [1] 19/5</p> <p><b>outside</b> [8] 99/15 133/17 164/8 171/11 209/22 227/11 243/21 244/1</p> <p><b>over</b> [30] 15/14 52/11 69/11 70/18 74/14 79/15 89/10 89/23 103/2 117/5 117/10 134/18 134/18 135/1 154/1 158/3 162/15 162/18 163/2 163/13 194/19 199/8 203/24 206/11 209/6 209/15 215/19 241/9 247/13 248/17</p> <p><b>overall</b> [1] 216/1</p> <p><b>overhead</b> [1] 73/13</p> <p><b>overlap</b> [1] 6/16</p> <p><b>overlay</b> [1] 205/19</p> <p><b>overly</b> [2] 136/13 250/7</p> <p><b>overriding</b> [1] 80/20</p> <p><b>overrule</b> [2] 7/4 37/21</p> <p><b>overruled</b> [9] 38/9 41/12 117/2 123/1 153/17 177/15 244/16 246/1 259/4</p> <p><b>overruling</b> [1] 245/4</p> <p><b>oversight</b> [1] 255/9</p> <p><b>overview</b> [1] 68/2</p> <p><b>overwhelming</b> [1] 73/19</p> <p><b>own</b> [16] 61/7 105/15 115/25 119/23 119/23 143/22 147/16 147/23 150/6 151/13 167/15 181/8 181/11 181/15 182/14 193/17</p> <hr/> <p><b>P</b></p> <hr/> <p><b>P.C</b> [1] 2/10</p> <p><b>p.m</b> [7] 113/2 113/7 113/25 144/10 191/11 191/12 261/13</p> <p><b>package</b> [1] 66/19</p> <p><b>page</b> [45] 33/22 33/22 34/3 34/4 37/25 40/1 53/7 54/21 56/2 60/20</p> |
|---|--|--|

|  |  |   |
|--|--|---|
| <p><b>P</b></p> <p><b>page...</b> [35] 60/22 60/23<br/>61/22 61/23 63/21 86/23<br/>86/24 87/11 99/24 100/2<br/>100/3 100/4 100/5 100/8<br/>103/17 113/1 113/10 113/24<br/>117/16 124/13 131/24 137/1<br/>145/9 165/5 165/6 165/6<br/>165/11 165/16 165/16<br/>168/20 168/21 168/25<br/>252/3 253/25 258/15</p> <p><b>page 14</b> [1] 253/25</p> <p><b>page 288</b> [2] 165/6 165/16</p> <p><b>page 379</b> [1] 37/25</p> <p><b>pages</b> [6] 59/24 66/2<br/>246/16 246/17 248/24<br/>251/6</p> <p><b>paid</b> [3] 85/21 85/24 86/1</p> <p><b>pandemic</b> [1] 262/8</p> <p><b>panel</b> [2] 73/9 73/13</p> <p><b>paper</b> [1] 155/18</p> <p><b>paragraph</b> [20] 25/8 25/9<br/>44/22 44/22 57/20 87/11<br/>94/8 94/9 94/10 137/17<br/>139/8 169/11 171/20 179/1<br/>186/9 186/10 190/25<br/>208/9 239/1 257/25</p> <p><b>paragraphs</b> [4] 18/6 18/9<br/>87/9 90/20</p> <p><b>parameter</b> [7] 24/8 24/13<br/>24/20 88/5 93/5 98/12<br/>135/7</p> <p><b>parameters</b> [9] 23/19<br/>23/21 23/25 24/22 25/1<br/>96/15 101/2 134/24 170/2</p> <p><b>paraphrasing</b> [1] 118/9</p> <p><b>parents</b> [1] 5/19</p> <p><b>Paroline</b> [1] 204/9</p> <p><b>parroted</b> [2] 164/12 164/15</p> <p><b>part</b> [36] 9/17 9/18 13/20<br/>13/22 26/6 42/11 49/13<br/>51/5 63/13 88/13 90/18</p> | <p>104/25 106/25 110/13<br/>111/19 114/24 130/8 135/23<br/>142/4 147/6 158/17 158/20<br/>158/22 171/17 179/8<br/>180/20 182/2 206/21<br/>210/18 217/18 217/23<br/>218/10 219/7 234/12<br/>234/16 243/23</p> <p><b>participants</b> [3] 95/23<br/>155/2 262/9</p> <p><b>participate</b> [2] 37/18<br/>51/23</p> <p><b>participated</b> [6] 174/12<br/>174/15 175/10 182/2 182/5<br/>182/10</p> <p><b>participating</b> [1] 52/8</p> <p><b>participation</b> [2] 41/15<br/>208/2</p> <p><b>particular</b> [35] 7/12 10/6<br/>12/25 14/9 33/22 36/14<br/>36/24 50/6 50/20 54/2<br/>56/19 57/20 61/25 82/24<br/>82/24 119/10 122/12<br/>122/25 136/12 145/23<br/>177/14 195/16 198/10<br/>199/9 200/9 202/5 206/8<br/>221/19 222/1 222/11 224/7<br/>225/17 228/21 253/9<br/>253/10</p> <p><b>particularly</b> [6] 125/9<br/>186/4 197/22 216/8 244/8<br/>250/2</p> <p><b>parties</b> [6] 51/4 155/6<br/>206/11 218/18 243/20<br/>250/15</p> <p><b>parts</b> [4] 131/5 134/16<br/>159/5 159/5</p> <p><b>party</b> [7] 13/19 38/12 41/4<br/>145/14 176/17 214/15<br/>215/17</p> <p><b>passage</b> [3] 34/7 34/9<br/>61/9</p> | <p><b>passenger</b> [4] 22/4 26/10<br/>88/21 135/13</p> <p><b>passenger-carrying</b> [3]<br/>26/10 88/21 135/13</p> <p><b>passenger-revenue</b> [1]<br/>22/4</p> <p><b>passengers</b> [15] 14/21<br/>14/25 59/15 62/15 67/12<br/>73/25 76/3 81/1 82/20<br/>83/5 84/5 84/13 84/19<br/>107/9 257/16</p> <p><b>past</b> [1] 65/23</p> <p><b>path</b> [1] 236/15</p> <p><b>patience</b> [2] 252/16<br/>252/22</p> <p><b>PATRICK</b> [1] 2/20</p> <p><b>Patrik</b> [2] 44/25 45/17</p> <p><b>PAUL</b> [2] 2/3 5/15</p> <p><b>pay</b> [1] 124/11</p> <p><b>pending</b> [4] 36/22 109/13<br/>110/15 196/11</p> <p><b>Pennsylvania</b> [1] 2/21</p> <p><b>people</b> [31] 16/18 29/10<br/>65/12 66/24 89/4 115/19<br/>116/1 116/5 123/9 131/5<br/>133/16 133/17 135/11<br/>155/12 170/11 172/15<br/>174/11 208/16 228/7<br/>229/23 232/24 233/1<br/>234/14 234/15 242/1<br/>247/7 249/9 254/12 259/1<br/>260/21 261/4</p> <p><b>per</b> [3] 86/2 146/12<br/>206/13</p> <p><b>perceived</b> [2] 47/13 47/13</p> <p><b>percent</b> [5] 17/5 24/4<br/>53/9 58/11 194/6</p> <p><b>percentage</b> [3] 24/3 24/6<br/>194/5</p> <p><b>perfectly</b> [1] 75/5</p> <p><b>perform</b> [2] 159/3 175/4</p> <p><b>performed</b> [3] 136/6</p> |
|--|--|---|



|                                  |                                   |                                   |
|----------------------------------|-----------------------------------|-----------------------------------|
| <b>P</b>                         | 201/24                            | 29/24 31/6 46/13 51/20            |
| <b>performed...</b> [2] 147/20   | <b>phrased</b> [1] 86/12          | 52/2 52/7 52/10 56/13             |
| 159/6                            | <b>phrasing</b> [1] 124/9         | 60/12 62/4 63/7 63/16             |
| <b>performing</b> [1] 114/17     | <b>pick</b> [1] 89/24             | 65/9 68/5 69/22 70/8              |
| <b>perhaps</b> [12] 13/3 21/15   | <b>picture</b> [2] 28/14 66/23    | 70/11 70/16 71/15 71/22           |
| 22/7 36/16 49/12 82/10           | <b>piece</b> [23] 32/15 37/19     | 72/6 72/11 72/17 73/10            |
| 89/22 210/25 231/9               | 66/15 116/13 120/23 121/1         | 74/4 74/15 77/14 78/1             |
| 231/14 244/8 256/20              | 124/19 126/15 126/18              | 80/16 84/8 84/11 84/20            |
| <b>period</b> [28] 78/17 79/9    | 133/24 134/22 135/8               | 85/11 89/6 89/6 89/23             |
| 79/11 79/25 82/4 82/11           | 135/15 135/17 208/7               | 90/24 96/7 97/19 103/4            |
| 104/19 117/10 127/25             | 208/8 210/18 221/7 221/10         | 107/13 107/14 113/7 114/8         |
| 132/24 157/7 167/18              | 224/17 224/19 231/22              | 114/16 115/1 115/4 117/21         |
| 167/24 172/3 172/20              | 232/3                             | 118/8 118/10 120/6 120/17         |
| 173/2 173/20 178/2               | <b>piecemeal</b> [1] 203/17       | 120/17 128/8 128/9 128/12         |
| 188/25 189/19 206/12             | <b>pieces</b> [8] 135/18 150/15   | 128/15 132/10 138/2 140/8         |
| 206/17 231/17 255/2              | 152/22 197/13 221/6               | 140/16 141/7 142/6 142/6          |
| 255/5 257/8 257/16               | 243/17 243/24 246/10              | 161/25 162/4 162/22               |
| 257/21                           | <b>pillar</b> [1] 98/10           | 163/21 164/10 175/23              |
| <b>perished</b> [1] 29/11        | <b>pilot</b> [73] 12/25 13/7 13/8 | 183/2 192/25 193/11 193/11        |
| <b>permissible</b> [2] 131/21    | 14/1 14/4 23/2 27/1 34/19         | 193/25 200/13 200/17              |
| 253/12                           | 43/12 46/5 46/21 46/23            | 201/11 201/17 207/9 207/9         |
| <b>permission</b> [6] 7/14 21/18 | 47/12 51/19 51/22 52/1            | 222/24 223/4 223/7                |
| 31/14 33/6 57/10 109/6           | 52/16 54/4 54/5 55/22             | 223/10 223/13 223/16              |
| <b>permits</b> [1] 219/1         | 56/4 57/8 58/24 59/1              | 223/24 224/2 224/3                |
| <b>permitted</b> [2] 119/12      | 67/2 68/12 68/24 69/2             | 224/12 224/23 225/9               |
| 146/10                           | 69/4 69/12 69/13 69/16            | 225/15 228/4 228/11               |
| <b>permutations</b> [1] 236/20   | 72/21 74/3 75/22 87/1             | 228/22 230/2 230/15               |
| <b>person</b> [3] 173/6 245/18   | 99/19 104/8 105/24 107/7          | 253/6 254/11 257/14               |
| 253/21                           | 114/12 114/12 115/9 119/24        | 258/12 259/13                     |
| <b>personal</b> [1] 164/5        | 121/2 140/23 142/2 143/3          | <b>pilots'</b> [1] 82/6           |
| <b>personally</b> [1] 51/8       | 143/4 143/21 152/12 157/6         | <b>pitch</b> [4] 21/9 22/8 169/3  |
| <b>personnel</b> [2] 42/6 51/13  | 157/17 158/21 159/2               | 169/23                            |
| <b>perspective</b> [1] 151/16    | 159/10 175/10 175/14              | <b>pitched</b> [2] 74/14 163/2    |
| <b>persuasive</b> [2] 194/21     | 178/12 192/18 192/21              | <b>pitching</b> [2] 24/15 24/18   |
| 194/24                           | 193/3 193/4 193/9 193/14          | <b>pitfalls</b> [1] 116/16        |
| <b>pertain</b> [1] 209/9         | 194/8 195/24 229/8                | <b>pivotal</b> [1] 67/18          |
| <b>pertained</b> [1] 207/8       | 230/22 232/4 239/7                | <b>place</b> [5] 82/24 83/23      |
| <b>pertinent</b> [1] 152/25      | 247/18 258/6                      | 101/15 216/21 248/20              |
| <b>phase</b> [2] 40/12 108/18    | <b>piloting</b> [1] 97/15         | <b>places</b> [1] 91/16           |
| <b>phenomenon</b> [1] 52/7       | <b>pilots</b> [114] 11/17 12/10   | <b>plaintiff</b> [3] 145/20 147/6 |
| <b>PHILLIPS</b> [1] 2/23         | 13/1 16/15 22/23 23/7             | 256/25                            |
| <b>phrase</b> [3] 68/18 186/19   | 26/6 26/9 27/22 28/25             | <b>plan</b> [2] 6/25 7/2          |

|                                |                                    |                                    |
|--------------------------------|------------------------------------|------------------------------------|
| <b>P</b>                       | 110/14 113/15 118/13 121/7         | <b>post-Lion [1]</b> 79/11         |
| <b>plane [49]</b> 95/7 95/25   | 121/11 127/5 128/19 131/14         | <b>potential [13]</b> 26/25 30/25  |
| 101/6 101/19 106/18 113/21     | 131/21 134/25 140/18               | 46/4 46/11 74/10 76/13             |
| 115/5 118/11 118/11 127/13     | 142/10 174/3 180/5 185/8           | 108/20 126/20 126/25               |
| 127/17 129/4 131/25 138/11     | 191/22 192/1 193/21 195/2          | 163/11 180/15 206/15               |
| 138/11 138/15 138/19 139/1     | 196/7 196/23 197/16                | 254/13                             |
| 139/10 140/13 140/15 141/6     | 197/23 198/3 198/10                | <b>potentially [5]</b> 14/17 46/16 |
| 142/8 142/12 159/17 192/11     | 198/15 199/7 199/13                | 81/9 84/21 256/24                  |
| 213/20 220/17 220/22           | 199/17 200/17 200/21               | <b>power [1]</b> 84/17             |
| 221/1 221/2 222/13 222/15      | 201/9 202/2 202/12 203/7           | <b>powerful [1]</b> 54/22          |
| 222/17 222/18 222/20           | 210/6 210/24 220/3 224/6           | <b>practical [2]</b> 14/17 200/7   |
| 222/23 222/24 223/12           | 224/14 224/15 225/3                | <b>practice [3]</b> 71/4 194/16    |
| 223/22 226/15 228/10           | 225/20 228/13 232/1                | 194/19                             |
| 230/21 231/10 231/13           | 233/18 235/7 238/16                | <b>pre [1]</b> 79/11               |
| 232/8 232/12 260/4             | 238/25 248/3 250/9                 | <b>pre-Ethiopian [1]</b> 79/11     |
| 260/16                         | 250/22 255/16 256/17               | <b>preceded [2]</b> 140/7 169/7    |
| <b>planes [10]</b> 85/4 201/11 | 259/23 260/7 261/1                 | <b>precertification [1]</b> 114/23 |
| 201/12 201/17 201/22           | <b>pointed [3]</b> 90/1 218/7      | <b>precise [1]</b> 27/4            |
| 202/18 247/14 253/7            | 234/23                             | <b>precisely [1]</b> 104/13        |
| 253/16 260/24                  | <b>points [11]</b> 6/21 43/6 43/7  | <b>precluded [1]</b> 115/12        |
| <b>planned [1]</b> 127/25      | 60/23 61/1 177/1 197/21            | <b>precursor [1]</b> 90/19         |
| <b>plans [2]</b> 190/9 255/10  | 198/1 198/2 198/12 247/12          | <b>predetermined [1]</b> 169/18    |
| <b>plausibly [1]</b> 220/19    | <b>policy [2]</b> 14/12 250/6      | <b>predicated [1]</b> 180/6        |
| <b>play [1]</b> 67/22          | <b>poor [1]</b> 29/20              | <b>prefer [1]</b> 57/25            |
| <b>played [2]</b> 67/18 171/23 | <b>popular [2]</b> 51/25 52/11     | <b>premier [1]</b> 200/3           |
| <b>plea [1]</b> 205/22         | <b>population [1]</b> 232/15       | <b>premise [1]</b> 197/3           |
| <b>please [11]</b> 5/4 34/3    | <b>portions [5]</b> 28/4 152/1     | <b>preparation [3]</b> 109/3       |
| 45/20 144/11 148/8 148/14      | 152/2 152/4 152/18                 | 149/23 152/19                      |
| 153/18 165/3 165/22            | <b>position [12]</b> 12/1 113/22   | <b>prepare [4]</b> 36/18 37/2      |
| 165/24 191/13                  | 197/14 199/5 205/2 210/7           | 80/16 229/22                       |
| <b>plot [2]</b> 56/15 115/10   | 211/5 211/10 214/3 214/4           | <b>prepared [6]</b> 19/6 29/8      |
| <b>plus [3]</b> 139/22 187/23  | 217/25 232/13                      | 37/2 86/6 217/10 245/10            |
| 195/18                         | <b>positions [1]</b> 256/11        | <b>preparing [2]</b> 9/8 219/24    |
| <b>podium [1]</b> 255/18       | <b>possess [2]</b> 10/25 92/11     | <b>preponderance [6]</b> 17/5      |
| <b>point [86]</b> 14/20 14/24  | <b>possessed [1]</b> 49/12         | 205/19 215/13 218/4                |
| 17/16 26/11 26/19 35/12        | <b>possibility [2]</b> 237/1 253/2 | 220/20 237/9                       |
| 36/1 36/4 37/6 46/13           | <b>possible [2]</b> 50/9 139/21    | <b>preposterous [1]</b> 48/11      |
| 47/20 61/3 61/22 72/14         | <b>possibly [1]</b> 84/19          | <b>prescribed [1]</b> 262/13       |
| 77/2 78/15 79/20 93/19         | <b>post [5]</b> 20/11 79/11 104/4  | <b>presence [1]</b> 164/19         |
| 94/25 95/1 95/23 97/3          | 157/9 178/1                        | <b>present [8]</b> 16/2 48/24      |
| 102/4 102/7 104/5 104/13       | <b>post-certification [1]</b>      | 75/9 87/24 127/7 166/4             |
| 105/22 105/25 107/6            | 20/11                              | 196/18 232/7                       |

|                                   |                                   |                                   |
|-----------------------------------|-----------------------------------|-----------------------------------|
| <b>P</b>                          | <b>privy [1]</b> 183/1            | <b>product [1]</b> 228/6          |
| <b>presentation [2]</b> 56/11     | <b>probable [1]</b> 211/22        | <b>production [1]</b> 189/16      |
| 63/17                             | <b>probably [12]</b> 8/11 22/11   | <b>Products [2]</b> 205/15 218/3  |
| <b>presentations [2]</b> 36/6     | 34/2 34/8 37/4 58/14              | <b>professional [4]</b> 16/14     |
| 243/16                            | 114/13 158/16 173/12              | 65/8 97/14 148/10                 |
| <b>presented [6]</b> 16/6 19/20   | 178/16 187/13 212/25              | <b>professor [5]</b> 202/11       |
| 135/9 176/16 203/8 225/11         | <b>probing [1]</b> 122/23         | 252/4 252/5 252/9 252/12          |
| <b>presenting [1]</b> 63/14       | <b>problem [5]</b> 146/3 169/20   | <b>proffer [1]</b> 80/3           |
| <b>preserving [1]</b> 197/9       | 212/10 214/24 258/13              | <b>proffered [3]</b> 144/22       |
| <b>Press [1]</b> 4/13             | <b>problematic [1]</b> 215/25     | 236/14 240/20                     |
| <b>pressure [4]</b> 73/3 73/6     | <b>problems [5]</b> 209/11 212/8  | <b>program [1]</b> 228/11         |
| 116/4 232/5                       | 213/16 214/24 215/23              | <b>progressed [1]</b> 85/3        |
| <b>pressures [1]</b> 73/7         | <b>procedure [30]</b> 14/12       | <b>prohibited [1]</b> 80/17       |
| <b>presumes [1]</b> 241/22        | 142/4 159/3 159/5 159/16          | <b>prohibits [1]</b> 71/7         |
| <b>pretty [6]</b> 54/22 66/22     | 159/20 159/21 160/7               | <b>project [2]</b> 2/4 48/20      |
| 146/16 170/16 177/1 251/12        | 160/21 160/24 160/24              | <b>projects [1]</b> 13/17         |
| <b>prevent [1]</b> 42/15          | 160/25 161/10 161/21 162/4        | <b>prolonged [1]</b> 77/24        |
| <b>preventable [1]</b> 29/11      | 162/12 162/23 163/8               | <b>promoted [1]</b> 35/15         |
| <b>prevented [3]</b> 80/14 120/5  | 163/14 164/11 172/23 173/1        | <b>promptly [1]</b> 246/1         |
| 229/8                             | 173/7 173/11 224/24               | <b>prong [1]</b> 205/11           |
| <b>preventing [3]</b> 22/24       | 225/14 239/6 239/13               | <b>pronounced [4]</b> 57/22       |
| 227/11 228/23                     | 239/15 239/25                     | 57/24 58/1 77/23                  |
| <b>previous [7]</b> 52/24 53/1    | <b>procedures [9]</b> 11/12 47/6  | <b>proof [3]</b> 17/4 197/15      |
| 88/7 102/9 119/13 161/8           | 158/23 175/13 184/16              | 252/17                            |
| 209/6                             | 189/13 189/15 190/3 232/5         | <b>proper [8]</b> 73/18 133/11    |
| <b>previously [16]</b> 11/19 17/2 | <b>proceed [1]</b> 160/15         | 143/13 197/16 216/15              |
| 17/14 21/19 23/4 52/23            | <b>proceeding [6]</b> 36/9 59/12  | 217/6 245/9 247/3                 |
| 86/8 87/20 91/25 105/5            | 111/16 146/6 209/7 259/3          | <b>properly [7]</b> 46/14 76/14   |
| 128/23 149/3 184/5 184/6          | <b>proceedings [9]</b> 8/12 78/25 | 95/10 201/12 246/3 253/6          |
| 209/3 236/9                       | 79/1 171/17 191/11 197/14         | 259/17                            |
| <b>primarily [5]</b> 10/7 91/3    | 261/13 262/6 262/10               | <b>proportionately [1]</b> 83/21  |
| 115/14 147/22 151/2               | <b>process [11]</b> 50/24 51/17   | <b>proposed [3]</b> 190/16        |
| <b>principle [1]</b> 251/13       | 124/23 129/1 133/11 133/14        | 212/20 213/1                      |
| <b>prior [24]</b> 31/23 44/16     | 133/15 172/18 173/21              | <b>proposition [1]</b> 211/17     |
| 78/6 128/13 144/24                | 178/5 218/16                      | <b>proprietary [8]</b> 14/2 20/14 |
| 144/25 145/21 157/18              | <b>processes [5]</b> 175/13       | 111/21 182/13 182/17              |
| 158/9 158/18 173/5 179/15         | 184/16 185/2 186/5 189/17         | 182/20 182/24 183/2               |
| 179/20 180/3 180/17               | <b>produce [4]</b> 128/14 133/1   | <b>prosecuted [1]</b> 235/4       |
| 185/10 190/21 205/3               | 250/15 253/10                     | <b>prosecution [4]</b> 18/2 18/5  |
| 210/16 212/10 213/13              | <b>produced [8]</b> 47/20 47/22   | 90/10 155/24                      |
| 217/2 217/2 219/11                | 48/9 154/8 200/6 254/5            | <b>prosecutors [5]</b> 33/1 44/5  |
| <b>private [1]</b> 175/3          | 257/6 257/7                       | 203/1 234/7 255/21                |

|   |   |   |
|---|---|---|
| <p><b>P</b></p> <p><b>protect</b> [1] 252/14</p> <p><b>protected</b> [1] 197/25</p> <p><b>protocol</b> [3] 50/25 51/3 51/6</p> <p><b>protocols</b> [2] 149/8 246/14</p> <p><b>prove</b> [7] 36/24 197/23 208/23 215/1 215/2 237/12 251/3</p> <p><b>proven</b> [5] 198/15 248/2 249/3 256/19 256/21</p> <p><b>proverbial</b> [2] 44/12 202/3</p> <p><b>provide</b> [15] 7/17 15/19 21/8 31/15 31/15 33/7 57/10 63/15 76/15 99/3 116/1 181/9 188/13 190/2 214/22</p> <p><b>provided</b> [17] 6/23 15/6 19/11 28/8 38/2 57/13 73/22 74/5 99/13 99/14 109/9 110/20 169/17 173/19 176/7 193/14 249/7</p> <p><b>providing</b> [2] 21/20 182/5</p> <p><b>proximate</b> [19] 183/12 201/23 202/20 204/11 204/23 205/6 205/9 205/17 205/18 210/2 211/19 214/23 226/15 232/21 232/21 232/24 234/3 242/18 242/19</p> <p><b>proximately</b> [2] 218/1 253/21</p> <p><b>proximity</b> [2] 83/10 83/18</p> <p><b>public</b> [5] 111/12 111/13 111/16 111/17 111/23</p> <p><b>publicly</b> [2] 45/16 110/12</p> <p><b>publish</b> [1] 232/1</p> <p><b>published</b> [1] 224/22</p> <p><b>publishes</b> [1] 231/25</p> <p><b>pull</b> [3] 69/14 109/17 118/10</p> <p><b>pulled</b> [1] 42/7</p> | <p><b>pulling</b> [3] 24/10 60/18 148/7</p> <p><b>pulls</b> [1] 22/18</p> <p><b>purported</b> [1] 154/18</p> <p><b>purpose</b> [6] 21/8 29/4 64/10 64/16 75/23 126/11</p> <p><b>purposes</b> [7] 12/23 75/11 82/23 125/21 151/5 152/10 197/9</p> <p><b>pursuant</b> [3] 10/4 11/16 35/13</p> <p><b>pursued</b> [1] 59/20</p> <p><b>purview</b> [2] 50/8 230/8</p> <p><b>push</b> [5] 72/23 89/10 95/7 103/1 106/18</p> <p><b>pushing</b> [3] 68/3 69/11 75/1</p> <p><b>put</b> [24] 22/3 61/13 71/10 75/3 77/25 108/13 146/16 162/1 166/9 170/5 170/9 176/11 189/7 210/11 210/21 211/2 211/11 223/12 233/8 236/10 243/24 245/19 247/9 249/14</p> <p><b>puts</b> [3] 167/4 170/2 218/15</p> <p><b>putting</b> [1] 258/4</p> <hr/> <p><b>Q</b></p> <p><b>qualifications</b> [3] 15/21 248/5 250/7</p> <p><b>qualified</b> [15] 14/19 14/22 75/22 157/15 184/7 184/11 184/15 185/1 240/24 245/23 248/10 249/6 250/21 256/16 261/2</p> <p><b>quantify</b> [1] 173/22</p> <p><b>quarterly</b> [1] 49/3</p> <p><b>question</b> [60] 12/9 12/24 18/15 18/16 29/20 34/11 34/17 34/23 35/3 43/2 45/18 63/23 64/14 67/20 67/24 68/1 71/19 72/25</p> | <p>75/11 82/23 86/12 88/10 93/14 94/2 101/11 105/19 119/13 119/13 122/15 123/2 124/6 126/12 133/7 134/18 134/19 137/7 141/4 142/19 143/15 151/24 153/14 154/23 155/15 161/15 175/17 175/18 177/22 180/6 181/20 196/12 203/13 227/15 233/18 235/13 247/24 249/20 251/19 252/17 253/19 256/3</p> <p><b>questioning</b> [1] 254/20</p> <p><b>questions</b> [35] 18/16 18/16 56/24 60/1 62/11 76/19 78/13 78/16 79/19 81/21 82/12 84/4 106/9 122/24 134/19 144/25 150/25 151/1 170/24 185/19 185/23 185/24 186/1 191/19 191/24 192/6 192/7 194/10 195/11 211/1 219/13 233/20 233/21 243/9 256/9</p> <p><b>quick</b> [1] 8/24</p> <p><b>quickest</b> [1] 34/8</p> <p><b>quickly</b> [7] 64/20 65/19 236/5 240/20 242/8 246/1 261/9</p> <p><b>QUINNEY</b> [1] 2/3</p> <p><b>quite</b> [8] 66/5 89/22 96/5 194/3 194/7 194/24 205/11 209/8</p> <p><b>quote</b> [1] 246/5</p> <p><b>quoting</b> [3] 252/9 252/12 255/20</p> <hr/> <p><b>R</b></p> <p><b>radar</b> [1] 146/19</p> <p><b>raise</b> [6] 163/3 196/24 211/1 217/12 217/15 217/15</p> <p><b>raises</b> [1] 218/6</p> |
|---|---|---|



|                                   |                                   |                                   |
|-----------------------------------|-----------------------------------|-----------------------------------|
| <b>R</b>                          | 156/16 166/25 170/6 170/7         | 253/21                            |
| <b>ramifications</b> [2] 135/10   | 170/8 176/7 183/24                | <b>reasons</b> [4] 42/4 76/5      |
| 203/3                             | 194/25 206/24 209/8               | 198/13 260/4                      |
| <b>rampant</b> [12] 93/23 95/16   | 217/2 217/3 218/10                | <b>rebut</b> [2] 123/21 196/21    |
| 95/19 95/22 104/23 119/17         | 233/24 236/2 257/25               | <b>rebuttal</b> [2] 126/14 243/17 |
| 120/13 129/12 132/5 187/7         | 258/10 258/20                     | <b>recall</b> [39] 35/21 42/20    |
| 188/1 188/6                       | <b>readily</b> [1] 52/9           | 116/21 117/4 123/17 136/3         |
| <b>ran</b> [1] 198/12             | <b>reading</b> [16] 33/24 56/24   | 136/4 136/5 136/8 136/8           |
| <b>range</b> [6] 12/2 26/25 46/11 | 95/20 95/22 95/25 96/1            | 143/20 143/24 145/2               |
| 86/7 98/16 187/14                 | 100/17 117/8 121/16 122/7         | 145/4 147/12 148/19               |
| <b>ranging</b> [2] 13/19 195/19   | 136/4 137/4 172/6 178/14          | 149/25 151/22 154/2 156/1         |
| <b>rare</b> [2] 88/20 193/10      | 178/18 219/15                     | 157/3 157/4 158/15 169/1          |
| <b>ratchet</b> [10] 89/1 95/24    | <b>readout</b> [1] 70/21          | 170/1 171/1 171/20 178/14         |
| 101/6 101/15 101/19 102/1         | <b>reads</b> [6] 103/24 112/25    | 179/10 179/11 180/22              |
| 106/17 113/21 131/7 221/1         | 113/9 141/21 169/2 169/22         | 185/12 198/11 198/19              |
| <b>ratcheted</b> [1] 228/10       | <b>real</b> [7] 14/21 28/15 29/13 | 199/14 208/11 229/25              |
| <b>ratcheting</b> [7] 89/4 89/17  | 29/23 83/6 194/16 202/17          | 230/18 245/12                     |
| 90/6 95/6 96/6 103/10             | <b>reality</b> [1] 217/21         | <b>recalling</b> [1] 146/21       |
| 134/11                            | <b>realized</b> [1] 131/5         | <b>recapitulating</b> [1] 65/25   |
| <b>rate</b> [3] 139/22 193/25     | <b>really</b> [29] 21/12 30/7     | <b>receive</b> [2] 8/13 36/23     |
| 194/6                             | 49/11 50/8 83/15 102/6            | <b>received</b> [18] 8/15 59/23   |
| <b>rated</b> [5] 11/9 11/14 54/6  | 102/11 105/12 108/7 116/19        | 60/12 74/9 96/13 97/5             |
| 157/19 157/20                     | 124/16 145/17 146/16              | 98/8 98/25 100/24 103/14          |
| <b>rather</b> [3] 136/1 168/17    | 147/4 154/10 155/14 179/4         | 106/12 108/15 110/17              |
| 251/4                             | 199/14 201/7 209/25               | 113/15 130/12 190/16              |
| <b>RDR</b> [2] 262/4 262/17       | 212/5 214/25 214/25               | 200/13 241/12                     |
| <b>reach</b> [3] 43/3 201/14      | 217/16 218/15 218/18              | <b>recently</b> [1] 32/13         |
| 254/22                            | 241/5 251/16 257/19               | <b>recess</b> [2] 144/9 261/11    |
| <b>reached</b> [4] 43/25 200/5    | <b>realm</b> [2] 13/18 134/5      | <b>recitation</b> [1] 255/1       |
| 201/15 248/1                      | <b>reams</b> [1] 109/14           | <b>recognition</b> [1] 76/22      |
| <b>reaching</b> [4] 17/11 19/9    | <b>reason</b> [22] 13/2 20/7      | <b>recognize</b> [7] 7/22 31/19   |
| 135/9 147/20                      | 36/16 38/25 41/24 111/12          | 33/11 39/19 74/11 75/25           |
| <b>reacting</b> [1] 62/3          | 111/17 111/20 125/3 172/2         | 84/23                             |
| <b>reaction</b> [1] 82/6          | 197/10 197/11 197/15              | <b>recognized</b> [4] 127/6       |
| <b>read</b> [48] 33/4 34/2 34/7   | 208/19 208/22 210/11              | 129/18 177/2 194/22               |
| 45/10 51/15 51/24 54/18           | 210/20 211/2 217/5 226/17         | <b>recognizing</b> [1] 205/18     |
| 61/2 90/9 90/12 90/14             | 237/17 238/14                     | <b>recollection</b> [9] 94/22     |
| 90/16 90/23 93/7 96/19            | <b>reasonable</b> [10] 16/14      | 145/19 149/18 164/22              |
| 108/9 108/18 109/3 109/3          | 16/24 65/7 69/9 105/2             | 165/2 168/4 168/12 168/13         |
| 110/11 115/14 122/9 123/18        | 147/14 208/24 218/17              | 186/24                            |
| 124/9 130/8 136/18 136/20         | 219/5 256/19                      | <b>recommend</b> [2] 195/4        |
| 136/21 136/23 148/4               | <b>reasonably</b> [2] 174/5       | 204/7                             |

|                                  |                                   |                                   |
|----------------------------------|-----------------------------------|-----------------------------------|
| <b>R</b>                         | <b>redo</b> [1] 34/19             | 168/15                            |
| <b>recommendation</b> [3] 61/18  | <b>reduced</b> [3] 25/15 83/21    | <b>refine</b> [1] 154/23          |
| 193/2 200/25                     | 190/2                             | <b>reflect</b> [5] 32/3 149/5     |
| <b>recommendations</b> [3] 49/8  | <b>redundancy</b> [1] 198/16      | 168/10 168/16 169/17              |
| 49/16 195/8                      | <b>REED</b> [1] 1/14              | <b>reflected</b> [4] 155/9 222/16 |
| <b>recommended</b> [1] 161/1     | <b>reevaluate</b> [2] 107/11      | 222/24 226/12                     |
| <b>recommending</b> [3] 161/24   | 121/11                            | <b>reflects</b> [2] 168/17 180/19 |
| 195/17 200/14                    | <b>reevaluation</b> [3] 121/3     | <b>refresh</b> [3] 145/18 149/18  |
| <b>reconvened</b> [3] 79/1       | 126/16 126/19                     | 168/21                            |
| 144/10 191/12                    | <b>refer</b> [11] 13/8 55/9       | <b>refreshes</b> [1] 165/2        |
| <b>record</b> [53] 7/9 7/9 16/3  | 56/22 86/18 87/21 88/3            | <b>refused</b> [1] 111/23         |
| 21/20 37/24 38/25 41/13          | 93/14 97/21 164/19 165/17         | <b>regard</b> [19] 9/3 10/9       |
| 45/9 45/12 55/7 58/9             | 181/13                            | 29/12 46/3 49/17 51/10            |
| 59/5 63/20 66/1 78/3             | <b>reference</b> [27] 9/21 21/12  | 51/11 76/3 79/9 82/10             |
| 79/5 94/8 94/18 105/18           | 23/12 55/7 55/10 55/12            | 99/17 132/11 146/1 150/6          |
| 109/9 133/2 168/23 177/19        | 55/13 56/1 63/21 93/1             | 172/21 178/11 193/17              |
| 180/7 188/18 190/23              | 93/3 93/4 118/4 131/25            | 195/24 202/12                     |
| 191/21 192/1 193/21 197/9        | 159/8 162/9 162/22 164/9          | <b>regarded</b> [1] 200/3         |
| 199/18 204/3 207/18              | 166/11 179/1 186/23               | <b>regarding</b> [12] 8/13 8/20   |
| 220/15 220/18 220/23             | 186/24 187/2 210/8                | 10/24 50/21 60/9 87/12            |
| 221/12 237/13 243/18             | 236/22 236/25 238/12              | 91/24 136/9 152/13 175/17         |
| 243/21 243/23 244/1              | <b>referenced</b> [19] 19/23      | 184/12 190/17                     |
| 245/5 246/10 247/2 247/4         | 36/4 56/22 77/4 130/1             | <b>regardless</b> [1] 85/8        |
| 247/20 247/22 247/22             | 130/20 172/22 205/3               | <b>regime</b> [2] 164/7 188/3     |
| 256/4 258/9 259/4 262/6          | 207/25 208/3 208/9 210/6          | <b>regional</b> [2] 170/18 170/18 |
| <b>recorder</b> [3] 66/17 174/9  | 210/11 210/15 210/21              | <b>Registration</b> [1] 145/25    |
| 174/9                            | 211/11 213/17 217/13              | <b>regular</b> [2] 173/11 245/14  |
| <b>recorders</b> [1] 66/18       | 235/15                            | <b>regulation</b> [2] 42/22       |
| <b>records</b> [5] 206/16 206/22 | <b>references</b> [7] 20/23       | 239/23                            |
| 214/20 245/13 248/22             | 23/17 45/14 86/25 118/4           | <b>regulations</b> [4] 34/20 47/7 |
| <b>recount</b> [1] 189/24        | 130/6 166/13                      | 48/13 49/11                       |
| <b>recounting</b> [1] 249/11     | <b>referencing</b> [3] 24/5 54/12 | <b>regulator</b> [8] 48/7 48/10   |
| <b>recover</b> [4] 71/15 103/4   | 173/1                             | 53/23 54/9 54/13 54/17            |
| 211/8 259/24                     | <b>referred</b> [5] 21/9 90/25    | 58/4 181/23                       |
| <b>recoverable</b> [1] 114/21    | 114/22 147/22 156/9               | <b>regulator's</b> [1] 182/4      |
| <b>recovered</b> [2] 66/13       | <b>referring</b> [20] 88/2 88/4   | <b>regulators</b> [43] 47/2 47/5  |
| 146/15                           | 93/3 97/13 98/3 98/5              | 49/20 49/25 50/3 50/4             |
| <b>recovery</b> [1] 158/25       | 101/10 104/11 104/16 108/6        | 50/17 50/21 54/11 55/8            |
| <b>red</b> [1] 70/23             | 112/7 135/1 156/10 162/11         | 58/14 64/13 64/19 64/20           |
| <b>redacted</b> [1] 154/3        | 168/5 168/10 168/24 170/2         | 64/25 65/1 112/22 129/21          |
| <b>redirect</b> [3] 3/8 82/13    | 172/4 173/19                      | 179/9 179/14 179/17               |
| 185/21                           | <b>refers</b> [3] 97/22 168/14    | 179/20 180/1 180/3 180/21         |

|                                     |                                   |                                  |
|-------------------------------------|-----------------------------------|----------------------------------|
| <b>R</b>                            | <b>relies [2]</b> 77/9 236/15     | 78/15 78/22 79/8 165/19          |
| <b>regulators...</b> [18] 180/25    | <b>relinquish [1]</b> 244/23      | <b>repetitively [2]</b> 71/22    |
| 181/4 181/14 182/1 185/3            | <b>relitigating [1]</b> 244/9     | 77/25                            |
| 194/11 194/20 200/8                 | <b>rely [8]</b> 43/2 101/1 216/5  | <b>rephrase [3]</b> 12/9 45/20   |
| 200/10 201/2 201/3 201/5            | 216/16 218/13 219/2 219/5         | 123/10                           |
| 202/4 202/16 221/12                 | 236/18                            | <b>replaced [1]</b> 139/2        |
| 243/2 243/7 252/21                  | <b>relying [4]</b> 217/9 217/17   | <b>replacements [1]</b> 189/10   |
| <b>regulatory [6]</b> 55/11 55/15   | 243/20 256/5                      | <b>replied [1]</b> 147/15        |
| 151/16 194/23 195/22                | <b>remain [1]</b> 50/10           | <b>reply [3]</b> 202/8 251/5     |
| 200/3                               | <b>remainder [1]</b> 210/5        | 253/25                           |
| <b>regurgitating [1]</b> 219/16     | <b>remained [1]</b> 169/16        | <b>report [92]</b> 7/12 7/25 8/4 |
| <b>reiterate [1]</b> 88/5           | <b>remaining [4]</b> 98/20        | 8/8 9/1 9/2 9/6 10/14            |
| <b>reiterated [2]</b> 163/13        | 203/13 211/13 253/19              | 17/22 18/12 18/17 18/20          |
| 225/12                              | <b>remains [1]</b> 22/12          | 19/5 28/4 28/5 38/13             |
| <b>reject [1]</b> 248/16            | <b>remarkably [1]</b> 246/12      | 44/16 45/4 56/3 58/7             |
| <b>relate [3]</b> 48/1 122/17       | <b>remedy [1]</b> 203/14          | 59/25 60/5 60/10 60/17           |
| 237/22                              | <b>remember [11]</b> 94/18        | 60/18 60/20 61/4 61/12           |
| <b>related [1]</b> 189/17           | 117/8 156/4 186/1 198/24          | 61/23 63/12 63/21 66/2           |
| <b>relates [5]</b> 109/12 122/5     | 207/19 248/11 249/10              | 66/3 66/9 68/19 86/22            |
| 182/9 211/16 216/14                 | 255/17 256/18 256/25              | 87/9 88/4 99/20 99/24            |
| <b>relationship [2]</b> 182/16      | <b>remind [1]</b> 244/11          | 100/18 103/17 104/4              |
| 253/12                              | <b>reminded [2]</b> 162/3 162/4   | 104/12 117/17 118/2 118/4        |
| <b>relative [3]</b> 24/16 130/15    | <b>reminder [2]</b> 44/16 239/12  | 120/2 120/8 124/7 124/8          |
| 190/6                               | <b>reminding [1]</b> 164/10       | 125/3 136/19 136/21 137/2        |
| <b>relatively [1]</b> 188/3         | <b>reminds [2]</b> 162/22 239/4   | 137/25 138/1 141/7 141/9         |
| <b>release [1]</b> 110/23           | <b>remote [1]</b> 204/22          | 141/18 141/19 141/22 145/6       |
| <b>Release.....</b>                 | <b>removal [4]</b> 88/17 98/17    | 145/9 147/2 147/23 148/4         |
| <b>...93 [1]</b> 4/13               | 136/3 136/9                       | 165/9 183/24 213/17 214/7        |
| <b>released [1]</b> 89/14           | <b>remove [2]</b> 103/5 251/16    | 214/11 215/14 215/15 217/3       |
| <b>relevant [11]</b> 8/11 28/4      | <b>removed [7]</b> 25/17 28/10    | 218/11 222/25 223/5              |
| 33/19 36/22 36/23 122/10            | 88/7 96/18 101/3 105/1            | 244/15 244/19 245/7              |
| 153/5 175/17 186/12                 | 105/8                             | 245/16 245/20 245/22             |
| 190/23 234/16                       | <b>render [2]</b> 176/13 239/18   | 245/22 245/23 246/9              |
| <b>reliability [2]</b> 217/8 219/21 | <b>Renee [1]</b> 7/10             | 246/19 248/24 258/11             |
| <b>reliable [4]</b> 215/9 215/10    | <b>renew [1]</b> 196/8            | 258/15 260/12                    |
| 218/20 218/24                       | <b>repaired [2]</b> 212/12 213/19 | <b>Report.....</b>               |
| <b>reliance [2]</b> 190/2 245/3     | <b>repeat [2]</b> 29/18 45/20     | <b>91 [3]</b> 4/10 4/11 4/12     |
| <b>relied [13]</b> 103/22 104/2     | <b>repeatedly [3]</b> 89/21       | <b>Report.....31</b>             |
| 220/25 228/22 235/17                | 135/19 239/22                     | <b>[1]</b> 4/17                  |
| 235/20 235/24 236/1                 | <b>repeater [1]</b> 73/12         | <b>Report.....57</b>             |
| 244/18 244/20 246/2                 | <b>repetitious [1]</b> 233/15     | <b>[1]</b> 4/5                   |
| 246/3 252/14                        | <b>repetitive [6]</b> 69/25 72/8  | <b>Report.....13 [1]</b>         |

|                                   |                                 |                                   |
|-----------------------------------|---------------------------------|-----------------------------------|
| <b>R</b>                          | <b>requalified [1]</b> 157/12   | 226/18 233/5 240/24               |
| <b>Report</b> .....13...          | <b>request [8]</b> 110/15 111/3 | 242/7 242/20                      |
| <b>[1]</b> 4/4                    | 111/4 111/25 112/1 131/15       | <b>respects [1]</b> 183/2         |
| <b>Report</b> .....68 [1]         | 204/25 213/1                    | <b>respond [19]</b> 29/6 46/15    |
| 4/6                               | <b>requested [1]</b> 109/11     | 52/3 69/13 69/20 71/16            |
| <b>Report</b> .....74 [1] 4/7     | <b>require [3]</b> 31/11 127/14 | 71/18 72/8 74/1 74/11             |
| <b>Report</b> .....07 [1] 4/16    | 127/18                          | 143/21 143/23 167/3 168/1         |
| <b>reported [3]</b> 143/22 212/11 | <b>required [31]</b> 14/3 17/4  | 189/5 207/15 225/9                |
| 213/18                            | 20/12 21/25 27/19 30/15         | 259/13 259/16                     |
| <b>Reporter [1]</b> 262/18        | 34/19 34/20 42/21 43/20         | <b>responding [5]</b> 20/16 80/18 |
| <b>Reporter's [2]</b> 3/15 262/2  | 46/5 53/21 54/5 57/3            | 80/21 80/22 194/1                 |
| <b>reports [40]</b> 18/24 19/2    | 58/24 59/1 61/19 63/19          | <b>response [5]</b> 128/3 173/2   |
| 50/14 50/15 50/16 50/20           | 87/24 114/18 124/10 152/11      | 217/14 218/7 246/24               |
| 51/16 52/17 65/22 66/11           | 175/23 190/3 203/11             | <b>responsibility [2]</b> 42/14   |
| 66/22 100/18 116/22 117/5         | 221/13 221/18 221/24            | 186/12                            |
| 121/18 136/21 147/23              | 227/7 228/15 229/4              | <b>responsible [5]</b> 98/13      |
| 149/5 149/10 149/12               | <b>requirement [20]</b> 24/1    | 107/8 146/14 181/25               |
| 149/16 200/12 214/6               | 24/3 24/6 25/14 25/16           | 192/21                            |
| 214/10 214/11 216/15              | 27/21 53/23 54/10 54/18         | <b>rest [3]</b> 67/21 202/24      |
| 216/16 217/10 218/14              | 56/9 56/21 58/6 63/6            | 244/17                            |
| 237/21 244/14 244/16              | 88/7 98/18 99/19 136/4          | <b>restart [1]</b> 165/18         |
| 244/19 245/6 245/11               | 169/16 227/22 227/24            | <b>restate [1]</b> 235/22         |
| 245/23 246/2 246/21               | <b>requirements [11]</b> 10/10  | <b>restating [1]</b> 236/3        |
| 246/25 247/1                      | 16/11 28/9 43/9 88/18           | <b>restrict [1]</b> 25/1          |
| <b>represent [13]</b> 33/17       | 101/12 102/9 190/10 190/16      | <b>result [16]</b> 10/22 35/16    |
| 39/22 106/3 144/19 154/8          | 250/8 255/11                    | 70/12 73/4 132/9 159/11           |
| 155/9 172/6 178/21 178/23         | <b>requiring [1]</b> 227/9      | 166/17 173/9 176/13               |
| 188/18 190/25 202/22              | <b>research [1]</b> 77/7        | 209/24 220/13 222/17              |
| 235/25                            | <b>resembles [1]</b> 21/21      | 227/19 253/10 253/11              |
| <b>representation [2]</b> 179/1   | <b>reserve [3]</b> 203/25 210/5 | 254/13                            |
| 256/7                             | 211/13                          | <b>resulted [5]</b> 26/4 211/4    |
| <b>representations [1]</b> 189/3  | <b>resolve [1]</b> 143/5        | 227/3 236/24 237/9                |
| <b>representative [4]</b> 9/22    | <b>resolving [1]</b> 247/24     | <b>resync [13]</b> 89/1 89/5      |
| 84/25 119/20 174/25               | <b>respect [17]</b> 6/13 14/8   | 89/15 90/4 117/20 117/21          |
| <b>representatives [4]</b> 10/2   | 79/14 96/23 97/4 118/21         | 163/22 165/18 165/21              |
| 15/16 255/18 258/14               | 122/12 138/3 138/18 143/3       | 166/5 166/16 167/3 187/17         |
| <b>represented [14]</b> 44/5      | 147/24 197/20 211/11            | <b>retained [3]</b> 13/15 15/18   |
| 86/9 86/13 138/20 138/22          | 214/5 222/10 222/12             | 147/2                             |
| 155/6 155/17 168/18 178/6         | 254/19                          | <b>reticent [1]</b> 219/13        |
| 178/7 178/13 178/22 186/8         | <b>respectfully [12]</b> 125/20 | <b>retrained [1]</b> 46/14        |
| 207/25                            | 204/19 204/25 205/13            | <b>return [10]</b> 20/11 27/24    |
| <b>representing [1]</b> 255/5     | 213/1 225/23 226/2              | 31/24 71/24 74/22 75/2            |



|                                   |                             |                                   |
|-----------------------------------|-----------------------------|-----------------------------------|
| <b>R</b>                          | 37/13 37/22 44/21 46/19     | 175/5 175/8 175/11 176/1          |
| <b>return...</b> [4] 159/17       | 48/5 50/13 53/9 55/16       | 176/10 176/13 176/24              |
| 159/18 241/8 241/13               | 55/17 57/9 58/13 60/15      | 179/5 180/18 180/25 181/5         |
| <b>returning</b> [1] 14/1         | 65/5 66/4 66/5 66/7 67/6    | 181/15 182/15 182/21              |
| <b>revealed</b> [1] 45/16         | 68/25 75/21 87/4 91/9       | 182/23 182/24 183/2               |
| <b>revenue</b> [4] 22/4 26/10     | 91/14 92/20 93/13 93/25     | 183/12 183/23 184/13              |
| 88/21 135/13                      | 94/5 95/14 96/13 96/22      | 184/23 185/3 190/13               |
| <b>review</b> [36] 9/3 9/5 18/17  | 97/7 97/11 97/25 98/4       | 191/13 191/23 192/6 197/4         |
| 31/22 65/19 68/20 91/2            | 98/9 98/20 98/25 99/4       | 197/7 199/17 203/1 203/14         |
| 91/15 93/1 123/6 131/16           | 99/8 99/12 99/22 100/11     | 203/20 205/23 216/20              |
| 135/23 135/25 136/2               | 100/15 100/20 100/24        | 218/25 223/10 224/2               |
| 138/17 140/5 150/23               | 101/6 101/20 103/7 103/23   | 227/13 227/16 227/25              |
| 150/24 151/11 151/18              | 104/3 104/20 105/16         | 230/13 232/18 233/4               |
| 151/25 153/2 153/6 156/17         | 106/19 111/19 111/22 111/25 | 234/19 237/15 244/25              |
| 156/20 157/2 164/5                | 112/8 112/11 112/15 112/17  | 247/1 248/12 256/11               |
| 164/25 165/12 171/7 171/7         | 112/24 113/8 113/16 113/22  | 260/22                            |
| 181/16 186/5 190/19 202/11        | 114/6 115/5 115/10 117/22   | <b>rights</b> [6] 197/25 202/23   |
| 216/16                            | 118/1 118/12 118/20 119/2   | 202/23 203/10 218/18              |
| <b>reviewed</b> [38] 9/6 17/11    | 119/5 119/10 120/22 121/14  | 244/24                            |
| 17/24 19/11 19/13 32/13           | 122/20 123/1 123/25         | <b>rigorous</b> [1] 250/7         |
| 32/16 42/10 50/14 51/2            | 124/12 124/23 125/5         | <b>rise</b> [1] 261/12            |
| 65/22 91/16 95/3 107/25           | 125/14 127/15 127/19        | <b>risk</b> [21] 78/19 80/25      |
| 108/5 119/11 129/11 143/8         | 128/10 128/20 129/5 129/8   | 81/21 82/15 82/19 82/22           |
| 149/24 150/18 151/5 151/21        | 129/19 129/23 130/1 130/5   | 83/6 83/12 83/15 83/22            |
| 152/2 152/19 153/22               | 130/19 130/21 130/25        | 84/4 126/24 135/6 177/5           |
| 155/24 156/14 156/25              | 131/2 131/12 132/16 132/20  | 177/6 195/9 202/13                |
| 156/25 164/23 171/13              | 134/2 134/23 137/6 137/12   | 202/17 202/18 252/15              |
| 171/15 181/2 181/6 189/16         | 138/4 138/8 138/11 138/19   | 252/22                            |
| 242/14 242/16 242/22              | 139/3 139/11 139/24 140/9   | <b>risks</b> [2] 83/4 84/1        |
| <b>reviewing</b> [5] 44/17 143/25 | 140/17 140/21 141/8 141/13  | <b>RMR</b> [2] 262/4 262/17       |
| 151/3 190/17 191/3                | 141/20 141/25 142/8         | <b>road</b> [1] 31/10             |
| <b>revisions</b> [1] 169/15       | 142/14 142/18 143/10        | <b>robbed</b> [4] 76/12 127/8     |
| <b>revisit</b> [1] 245/1          | 145/16 148/11 148/23        | 234/21 235/3                      |
| <b>revisiting</b> [1] 245/9       | 149/12 149/17 150/12        | <b>robbery</b> [1] 234/24         |
| <b>Ribbeck</b> [2] 146/8 146/13   | 152/16 154/6 155/12         | <b>Robertson</b> [3] 252/4 252/9  |
| <b>Richmond</b> [1] 2/18          | 155/25 156/15 158/4 158/5   | 252/12                            |
| <b>riding</b> [2] 192/18 193/14   | 158/7 159/4 159/19 160/10   | <b>robs</b> [1] 234/20            |
| <b>Riffel</b> [1] 5/22            | 160/11 160/16 160/22 161/3  | <b>role</b> [7] 35/13 51/16 67/18 |
| <b>right</b> [221] 9/17 13/9      | 161/4 161/6 162/13 165/14   | 67/22 171/23 175/3                |
| 14/23 15/5 15/25 17/10            | 167/9 169/16 170/14 171/18  | 237/16                            |
| 17/15 17/18 20/19 21/11           | 172/13 172/23 173/17        | <b>roll</b> [2] 22/8 22/18        |
| 27/24 33/5 36/1 36/3              | 174/1 174/18 174/23 175/2   | <b>rolled</b> [1] 22/9            |

|  |   |   |
|--|---|---|
| <p><b>R</b></p> <p><b>Roman</b> [1] 137/1</p> <p><b>Room</b> [1] 262/20</p> <p><b>rooms</b> [1] 51/20</p> <p><b>rotate</b> [1] 125/23</p> <p><b>rotation</b> [1] 78/7</p> <p><b>rotor</b> [1] 13/21</p> <p><b>rough</b> [1] 71/17</p> <p><b>roughly</b> [7] 11/7 12/16<br/>66/5 139/16 158/1 158/6<br/>158/9</p> <p><b>rounds</b> [1] 235/11</p> <p><b>route</b> [1] 240/22</p> <p><b>routes</b> [2] 198/20 199/11</p> <p><b>routinely</b> [1] 246/22</p> <p><b>Rubi</b> [1] 5/17</p> <p><b>rudder</b> [1] 22/13</p> <p><b>rule</b> [8] 6/19 6/22 109/20<br/>218/25 219/1 244/24<br/>250/6 252/13</p> <p><b>Rule 702</b> [3] 218/25 219/1<br/>250/6</p> <p><b>rules</b> [5] 6/20 218/21<br/>235/18 250/5 253/5</p> <p><b>ruling</b> [4] 197/20 244/9<br/>245/2 261/9</p> <p><b>run</b> [10] 9/1 9/3 42/6 64/6<br/>64/7 114/23 187/3 201/1<br/>243/14 252/2</p> <p><b>runaway</b> [47] 128/9 142/3<br/>142/5 142/7 158/21 159/1<br/>159/22 160/6 160/8 160/16<br/>160/18 160/21 160/23<br/>160/25 161/5 161/8 161/12<br/>161/21 162/5 162/12<br/>162/23 163/3 163/7 163/11<br/>163/14 163/19 164/22<br/>166/17 166/18 166/22<br/>166/23 167/2 172/22 173/1<br/>173/8 173/9 173/11 224/4<br/>224/24 231/11 231/12<br/>232/5 239/5 239/7 239/12</p> | <p>239/24 240/6</p> <p><b>run</b> [2] 8/24 10/20</p> <p><b>running</b> [14] 93/22 95/16<br/>95/19 95/22 104/22 115/8<br/>119/17 120/12 129/12 132/4<br/>161/13 187/7 187/25<br/>260/24</p> <p><b>runs</b> [1] 188/6</p> <p><b>runway</b> [2] 29/21 125/23</p> <p><b>Ryan</b> [1] 5/16</p> <hr/> <p><b>S</b></p> <p><b>sadly</b> [2] 190/19 260/20</p> <p><b>safe</b> [7] 70/24 75/6 78/7<br/>105/2 170/9 198/16<br/>260/24</p> <p><b>safeguard</b> [1] 98/20</p> <p><b>safeguards</b> [2] 101/18<br/>105/1</p> <p><b>safely</b> [12] 70/3 75/4<br/>76/17 140/14 140/15 142/8<br/>159/13 201/12 201/17<br/>223/22 232/11 247/15</p> <p><b>safes</b> [1] 96/15</p> <p><b>safety</b> [24] 8/19 20/3<br/>30/14 46/7 46/9 46/15<br/>51/15 58/3 77/8 98/11<br/>99/21 101/2 101/12 107/8<br/>107/17 118/1 120/25 121/7<br/>121/10 125/2 195/9 202/4<br/>252/21 252/22</p> <p><b>safety-based</b> [3] 99/21<br/>118/1 125/2</p> <p><b>safety-critical</b> [1] 107/17</p> <p><b>safety-minded</b> [2] 120/25<br/>121/10</p> <p><b>said</b> [56] 34/25 39/8<br/>40/11 44/13 50/12 58/8<br/>61/12 69/3 71/3 104/6<br/>106/13 106/19 110/11 114/8<br/>121/23 128/16 129/16<br/>129/20 131/23 141/15<br/>146/6 148/1 149/23 154/15</p> | <p>156/25 158/12 159/1<br/>163/16 164/21 174/2 178/13<br/>187/7 197/22 199/19<br/>199/20 199/23 205/8<br/>208/16 210/4 211/5 219/13<br/>226/24 228/6 228/14<br/>228/25 230/16 239/17<br/>239/22 239/23 247/5<br/>252/6 252/13 255/3 258/3<br/>258/25 259/12</p> <p><b>sailed</b> [1] 6/22</p> <p><b>salient</b> [2] 32/2 190/14</p> <p><b>Salinas</b> [2] 205/5 251/11</p> <p><b>Salt</b> [1] 2/5</p> <p><b>same</b> [45] 44/1 46/17<br/>54/21 55/6 58/7 60/23<br/>61/23 68/19 72/4 73/20<br/>80/4 80/11 84/1 96/25<br/>116/15 136/17 138/11<br/>138/13 138/15 142/2 147/5<br/>155/4 161/10 161/24 167/4<br/>167/20 168/24 177/5<br/>192/10 198/17 198/20<br/>200/13 201/15 201/16<br/>213/20 222/11 231/14<br/>232/7 234/14 235/3 248/1<br/>248/18 248/19 257/19<br/>258/22</p> <p><b>Samya</b> [1] 5/21</p> <p><b>sand</b> [1] 119/16</p> <p><b>SANTOS</b> [1] 2/16</p> <p><b>sat</b> [4] 22/16 39/7 107/1<br/>107/12</p> <p><b>satisfied</b> [2] 24/23 102/5</p> <p><b>satisfy</b> [1] 23/19</p> <p><b>save</b> [3] 26/10 75/6 85/11</p> <p><b>saved</b> [2] 16/19 65/12</p> <p><b>saving</b> [1] 200/24</p> <p><b>saw</b> [5] 71/23 127/9<br/>206/24 215/22 219/25</p> <p><b>say</b> [73] 6/17 20/16 24/2<br/>29/19 37/16 44/12 46/10</p> |
|--|---|---|

|  |   |   |
|--|---|---|
| <p><b>S</b><br/> <b>say... [66]</b> 57/5 73/2<br/> 76/8 76/20 82/4 85/23<br/> 91/20 93/4 95/18 98/2<br/> 107/10 108/3 108/12<br/> 110/24 111/8 112/19 113/14<br/> 113/17 113/18 113/23<br/> 120/20 121/2 122/1 122/4<br/> 122/15 124/12 151/4 152/21<br/> 155/13 156/24 157/22<br/> 162/10 163/15 167/23<br/> 170/15 182/19 188/5<br/> 188/24 192/7 206/16<br/> 209/25 213/25 216/1<br/> 216/5 217/11 223/19 227/6<br/> 231/9 234/22 235/2 236/5<br/> 236/23 237/7 238/17<br/> 239/19 240/5 242/12<br/> 247/8 247/20 247/22<br/> 251/1 252/1 252/6 255/14<br/> 257/3 258/7<br/> <b>saying [27]</b> 35/24 54/21<br/> 101/17 101/24 102/15<br/> 102/22 103/8 108/1 111/2<br/> 150/11 154/17 155/12 188/6<br/> 211/20 213/7 218/10 219/3<br/> 219/6 219/7 219/8 227/22<br/> 238/8 240/23 246/13<br/> 250/6 254/15 254/20<br/> <b>says [49]</b> 34/1 44/23<br/> 45/13 53/14 54/9 56/7<br/> 57/20 58/5 58/13 72/23<br/> 87/11 87/17 93/19 94/10<br/> 94/18 95/21 105/2 109/10<br/> 112/21 112/23 113/2 113/7<br/> 113/25 117/23 120/14<br/> 130/8 137/16 137/17 139/7<br/> 141/12 148/8 160/18<br/> 160/25 169/10 170/17<br/> 170/22 171/21 172/2 200/1<br/> 216/15 219/14 219/14<br/> 234/25 235/23 236/15</p> | <p>248/24 252/8 255/1 255/8<br/> <b>scale [2]</b> 211/22 211/23<br/> <b>scenario [3]</b> 193/12 228/4<br/> 237/5<br/> <b>scenarios [9]</b> 78/1 221/19<br/> 222/2 230/25 237/11<br/> 237/20 238/9 238/15<br/> 259/6<br/> <b>schedule [2]</b> 42/7 42/9<br/> <b>science [2]</b> 8/15 8/18<br/> <b>scientific [6]</b> 16/25 147/11<br/> 147/14 147/17 148/13<br/> 216/23<br/> <b>Scientists [1]</b> 13/11<br/> <b>scope [32]</b> 20/24 21/1 21/6<br/> 21/8 23/13 25/6 25/10<br/> 25/12 25/23 26/24 28/20<br/> 32/19 32/22 44/24 75/14<br/> 75/16 91/4 91/19 94/11<br/> 98/2 99/15 105/5 117/1<br/> 121/21 123/23 171/25<br/> 178/10 184/17 185/25<br/> 186/4 208/21 235/8<br/> <b>scrambling [2]</b> 61/8 133/11<br/> <b>screen [1]</b> 102/21<br/> <b>screens [1]</b> 116/3<br/> <b>se [1]</b> 146/12<br/> <b>Sea [1]</b> 259/23<br/> <b>seasoned [1]</b> 84/22<br/> <b>seat [6]</b> 14/21 14/23 158/1<br/> 158/5 158/7 158/9<br/> <b>seated [5]</b> 5/4 6/25 15/15<br/> 144/11 191/13<br/> <b>seats [1]</b> 157/20<br/> <b>second [35]</b> 6/9 6/16 13/10<br/> 13/12 14/22 17/16 24/8<br/> 28/10 36/3 46/19 57/19<br/> 96/17 113/1 113/24 117/19<br/> 134/17 134/17 140/25<br/> 140/25 145/10 164/20<br/> 165/5 169/11 185/6 193/23<br/> 195/25 199/7 201/9</p> | <p>202/12 205/11 213/18<br/> 232/22 243/19 252/24<br/> 257/12<br/> <b>secondly [2]</b> 16/10 23/1<br/> <b>seconds [14]</b> 5/12 89/8<br/> 89/15 89/22 90/5 143/5<br/> 143/22 143/23 163/12<br/> 163/22 165/18 166/17<br/> 167/4 187/18<br/> <b>section [6]</b> 18/4 86/23<br/> 99/20 100/11 137/25 159/8<br/> <b>sector [1]</b> 8/22<br/> <b>secure [1]</b> 58/22<br/> <b>securities [1]</b> 206/9<br/> <b>see [34]</b> 15/21 15/23 26/9<br/> 37/25 53/24 54/21 54/25<br/> 58/17 61/9 62/5 62/11<br/> 89/25 92/24 92/24 105/7<br/> 106/16 111/2 111/13 113/4<br/> 113/12 114/1 114/9 116/17<br/> 131/9 137/23 139/8 139/9<br/> 148/13 157/17 158/23<br/> 165/2 169/10 199/25<br/> 248/21<br/> <b>seeing [1]</b> 78/2<br/> <b>seeks [3]</b> 120/3 120/8<br/> 120/10<br/> <b>seem [4]</b> 107/18 124/7<br/> 124/9 149/5<br/> <b>seemed [4]</b> 42/14 50/8<br/> 149/8 182/19<br/> <b>seeming [1]</b> 151/12<br/> <b>seems [5]</b> 93/7 107/21<br/> 125/15 145/17 164/16<br/> <b>seen [26]</b> 21/11 23/17 77/3<br/> 98/22 103/13 103/16<br/> 103/25 106/11 106/13<br/> 109/4 114/3 117/24 118/19<br/> 119/8 124/21 129/17 130/4<br/> 131/9 134/7 134/12 135/19<br/> 143/16 144/1 194/20<br/> 196/24 220/12</p> |
|--|---|---|

|  |  |  |
|--|--|--|
| <b>S</b>   | <b>series [7]</b> 11/20 43/5<br>116/11 198/12 220/14<br>221/16 233/2   | <b>shares [2]</b> 206/18 214/21<br><b>sharing [1]</b> 107/16   |
| <b>segment [3]</b> 12/4 12/25<br>13/7  | <b>serve [1]</b> 10/3  | <b>she [35]</b> 32/19 33/2 35/10<br>35/11 35/12 35/13 35/14<br>35/14 37/2 37/3 37/3<br>37/5 38/1 38/2 39/8 40/16<br>40/18 40/18 44/7 44/13<br>69/14 122/8 122/9 122/11<br>183/20 219/13 238/5<br>242/11 242/13 242/15<br>249/6 255/25 256/1 256/2<br>258/4   |
| <b>segments [1]</b> 13/2   | <b>served [4]</b> 12/24 13/19<br>15/11 108/19  | <b>she's [6]</b> 35/15 122/21<br>122/24 183/19 183/20<br>219/15  |
| <b>semiannual [1]</b> 49/4   | <b>serves [3]</b> 109/24 168/12<br>186/25  | <b>shed [1]</b> 162/2  |
| <b>semiannual-type [1]</b> 49/4  | <b>service [11]</b> 20/11 31/24<br>48/25 49/15 88/11 109/23<br>110/19 110/21 170/19 241/8<br>241/14  | <b>sheds [1]</b> 122/2   |
| <b>sending [1]</b> 9/9   | <b>serving [1]</b> 13/13   | <b>shift [1]</b> 46/19   |
| <b>senior [1]</b> 208/10   | <b>session [2]</b> 96/6 96/9   | <b>shifts [1]</b> 257/2  |
| <b>sense [7]</b> 12/11 12/20<br>69/20 70/15 102/14 106/2<br>136/14   | <b>sessions [1]</b> 189/12   | <b>ship [1]</b> 6/21   |
| <b>sensed [1]</b> 84/6   | <b>set [20]</b> 14/15 15/22 16/3<br>19/19 24/11 24/20 53/13<br>55/20 62/10 65/6 70/25<br>72/2 75/9 84/4 173/3<br>195/11 202/25 206/25<br>210/12 233/24 | <b>shocked [1]</b> 107/5   |
| <b>senses [1]</b> 70/7   | <b>sets [1]</b> 20/20  | <b>shocker [13]</b> 40/11 91/24<br>94/23 109/4 110/8 112/13<br>112/16 113/11 119/17 121/2<br>129/12 186/17 207/2   |
| <b>sensing [1]</b> 73/6  | <b>setting [3]</b> 67/6 200/8<br>208/24  | <b>shocking [1]</b> 121/1  |
| <b>sensitive [1]</b> 116/14  | <b>settled [1]</b> 258/5   | <b>short [3]</b> 197/10 197/11<br>197/15   |
| <b>sensor [28]</b> 26/13 68/6<br>73/5 88/9 88/9 88/15<br>96/13 97/5 98/19 100/24<br>102/7 102/10 102/12<br>102/22 102/25 103/2<br>103/8 103/23 104/3 113/16<br>118/25 139/6 140/7 212/8<br>212/9 213/14 219/11<br>222/14 | <b>setup [1]</b> 193/7   | <b>Shorter [1]</b> 80/13   |
| <b>sensors [1]</b> 139/2   | <b>seven [2]</b> 18/11 198/12  | <b>shortly [1]</b> 129/4   |
| <b>sensory [1]</b> 70/10   | <b>several [6]</b> 5/12 59/24<br>135/22 148/17 167/20<br>172/11  | <b>should [38]</b> 6/20 26/5<br>34/2 37/4 57/21 88/21<br>104/24 105/14 105/15<br>105/16 111/16 120/24 121/3<br>121/5 121/14 121/25 122/21<br>124/12 126/10 129/25<br>129/25 132/10 170/15<br>173/14 176/20 199/5<br>199/14 205/14 208/16<br>211/8 211/9 226/7 226/10<br>226/11 226/18 248/9 251/1<br>256/9 |
| <b>sent [2]</b> 167/16 170/17  | <b>severe [1]</b> 46/12  |  |
| <b>sentence [5]</b> 53/10 54/25<br>130/11 169/11 169/22  | <b>shaker [9]</b> 68/8 68/11 71/3<br>141/13 213/15 222/25<br>223/3 223/5 223/13  |  |
| <b>sentences [3]</b> 53/18 53/24<br>54/8   | <b>shaking [1]</b> 71/6  |  |
| <b>sentencing [1]</b> 205/7  | <b>shape [1]</b> 225/12  |  |
| <b>separate [11]</b> 61/4 63/23<br>80/5 89/16 105/4 127/2<br>138/14 177/13 194/15<br>227/11 246/9  | <b>share [5]</b> 56/10 125/6<br>125/8 206/13 231/6   |  |
| <b>separately [3]</b> 18/6 203/16<br>217/5   | <b>shared [2]</b> 107/14 125/4   |  |
| <b>September [3]</b> 145/16<br>157/13 262/15   | <b>shareholder [2]</b> 206/17<br>214/21  |  |
| <b>sequence [2]</b> 163/13 254/4   | <b>shareholders [1]</b> 206/20   |  |
| <b>sequestration [1]</b> 6/19  |  |  |



|                                   |                                  |                                   |
|-----------------------------------|----------------------------------|-----------------------------------|
| <b>S</b>                          | 93/23 96/9 96/24 104/23          | 221/23 221/25                     |
| <b>shoulders [1]</b> 42/15        | 106/1 115/7 115/14 119/18        | <b>simultaneously [2]</b> 68/15   |
| <b>shouldn't [4]</b> 58/16 110/24 | 120/13 129/13 229/18             | 109/18                            |
| 187/16 229/15                     | <b>similar [4]</b> 23/2 37/25    | <b>since [7]</b> 19/8 19/16 63/10 |
| <b>shouting [1]</b> 84/20         | 52/6 116/16                      | 100/14 100/15 147/7               |
| <b>show [16]</b> 21/15 39/9 42/9  | <b>similarly [1]</b> 83/23       | 157/16                            |
| 52/22 79/10 171/10 172/9          | <b>simple [1]</b> 28/8           | <b>single [37]</b> 26/11 26/14    |
| 181/3 181/14 214/20 227/1         | <b>simplest [2]</b> 61/1 254/22  | 26/24 72/8 75/6 88/8              |
| 228/2 234/18 236/12               | <b>simplistic [1]</b> 142/19     | 88/14 97/5 98/3 98/8              |
| 236/14 252/22                     | <b>simply [5]</b> 150/24 224/23  | 98/19 98/25 100/24 101/2          |
| <b>showed [4]</b> 120/14 149/15   | 225/14 226/13 229/9              | 101/14 103/23 104/2               |
| 181/6 212/19                      | <b>sims [1]</b> 92/5             | 106/12 113/16 127/5 130/13        |
| <b>showing [2]</b> 112/5 213/9    | <b>simulator [92]</b> 14/18 15/1 | 131/7 134/19 135/7 135/8          |
| <b>shown [8]</b> 21/19 148/18     | 15/2 16/8 16/17 19/22            | 135/15 145/20 220/25              |
| 153/25 154/1 186/17               | 27/20 27/23 29/7 30/7            | 228/9 238/18 238/20               |
| 241/20 252/16 253/18              | 30/10 30/19 31/5 31/11           | 238/24 240/19 240/25              |
| <b>shows [17]</b> 62/1 98/24      | 32/3 35/5 38/2 40/18             | 245/17 251/14 259/19              |
| 103/13 104/1 113/3 114/3          | 41/25 42/5 42/5 43/4             | <b>single-point [1]</b> 26/11     |
| 117/24 119/8 124/21 131/10        | 43/16 43/20 43/23 44/8           | <b>sir [88]</b> 7/23 9/10 9/13    |
| 143/16 220/15 220/18              | 44/14 53/20 56/12 57/3           | 11/25 15/20 16/9 17/1             |
| 220/19 229/12 247/4               | 61/14 62/2 62/3 65/10            | 17/25 21/2 23/23 25/21            |
| 247/5                             | 71/4 92/2 92/8 95/16             | 26/14 27/18 28/24 31/12           |
| <b>sic [7]</b> 56/8 58/4 80/14    | 95/19 96/6 97/2 107/5            | 33/4 38/6 43/11 43/14             |
| 118/15 120/3 161/15 237/19        | 116/23 117/6 125/10 127/10       | 43/24 47/3 47/19 48/23            |
| <b>side [13]</b> 22/9 62/10       | 127/18 138/2 158/24              | 52/20 53/8 53/12 53/25            |
| 70/18 73/5 73/10 100/12           | 186/20 187/1 187/20              | 55/1 57/7 57/18 59/18             |
| 146/22 147/2 199/24               | 189/12 207/9 207/10              | 67/16 84/2 86/6 86/18             |
| 200/22 209/21 235/21              | 207/10 207/18 207/21             | 89/17 90/13 91/15 91/22           |
| 251/1                             | 221/11 221/15 221/18             | 92/25 93/15 95/15 96/5            |
| <b>sides [2]</b> 243/16 244/15    | 227/7 227/9 228/2 228/11         | 98/1 98/5 99/13 100/13            |
| <b>signal [1]</b> 190/7           | 228/11 228/14 228/18             | 102/17 104/4 105/21               |
| <b>signed [2]</b> 14/25 262/15    | 228/19 228/20 229/13             | 106/24 107/21 110/4 112/18        |
| <b>significance [4]</b> 213/10    | 229/13 230/14 230/15             | 112/25 113/9 114/13 115/18        |
| 213/10 231/17 257/9               | 236/16 237/4 237/10              | 116/9 117/13 117/18 118/2         |
| <b>significant [16]</b> 8/25      | 239/4 239/11 239/25              | 118/13 119/6 124/14 129/9         |
| 25/22 25/25 26/2 77/14            | 241/3 241/7 241/13 241/20        | 133/14 134/3 138/16 140/3         |
| 77/20 204/24 204/24               | 241/22 242/2 243/8               | 143/19 144/3 144/18 145/11        |
| 210/17 211/18 211/19              | 248/25 256/1 259/9               | 145/17 148/12 149/13 151/9        |
| 211/23 217/12 222/22              | 259/11 259/12                    | 151/23 157/11 165/11              |
| 223/7 250/16                      | <b>simulators [10]</b> 115/16    | 167/19 171/19 178/15              |
| <b>silos [1]</b> 107/3            | 115/17 115/21 115/25 116/3       | 186/14 187/19 190/18              |
| <b>sim [14]</b> 61/6 92/4 93/21   | 116/7 116/10 221/22              | 195/18                            |

|  |   |  |
|--|---|--|
| <p><b>S</b></p> <p><b>sister [1]</b> 6/1</p> <p><b>sit [8]</b> 75/20 76/1 77/22<br/>116/2 153/9 153/21 176/16<br/>258/8</p> <p><b>sitting [5]</b> 29/10 33/2<br/>47/16 155/11 197/12</p> <p><b>situation [5]</b> 28/14 71/11<br/>71/24 82/25 167/4</p> <p><b>situations [2]</b> 13/5 76/22</p> <p><b>six [3]</b> 62/14 86/24 87/11</p> <p><b>Sixth [1]</b> 205/24</p> <p><b>size [1]</b> 163/7</p> <p><b>SJ [1]</b> 2/3</p> <p><b>skill [3]</b> 10/5 10/6 14/15</p> <p><b>skills [1]</b> 10/24</p> <p><b>skip [1]</b> 18/22</p> <p><b>sky [2]</b> 115/5 139/10</p> <p><b>slam [2]</b> 202/4 242/21</p> <p><b>slightly [4]</b> 15/14 41/22<br/>72/3 82/18</p> <p><b>small [4]</b> 13/20 72/14<br/>88/20 169/1</p> <p><b>smoke [2]</b> 257/11 257/12</p> <p><b>so [315]</b></p> <p><b>so-called [1]</b> 50/3</p> <p><b>sold [2]</b> 47/23 47/25</p> <p><b>sole [3]</b> 98/12 98/12<br/>251/14</p> <p><b>solely [2]</b> 93/5 101/1</p> <p><b>solution [1]</b> 71/1</p> <p><b>some [73]</b> 8/24 13/24 15/6<br/>17/3 17/14 17/16 17/16<br/>17/23 19/13 20/19 23/17<br/>26/19 32/1 36/4 36/5<br/>36/19 51/24 52/11 55/8<br/>57/21 61/2 65/25 70/6<br/>73/8 77/4 82/12 88/23<br/>93/19 100/16 100/16<br/>100/19 107/22 108/5 113/2<br/>114/24 132/1 136/2 141/3<br/>142/10 144/21 144/25</p> | <p>146/16 153/25 154/1<br/>168/25 181/6 182/5 190/23<br/>192/9 192/12 194/10<br/>197/10 197/15 200/22<br/>201/10 202/3 208/6<br/>209/16 209/18 211/3 211/7<br/>213/3 216/23 218/7 219/16<br/>230/2 231/25 233/21<br/>251/1 251/23 256/3<br/>256/23 262/8</p> <p><b>somebody [3]</b> 42/6 183/17<br/>209/18</p> <p><b>somehow [6]</b> 122/2 143/24<br/>146/14 214/22 228/22<br/>258/17</p> <p><b>someone [10]</b> 9/9 22/2<br/>77/6 86/9 86/9 92/8 92/8<br/>108/15 198/18 226/7</p> <p><b>something [39]</b> 10/13 13/10<br/>15/10 20/23 23/7 26/9<br/>51/20 68/11 77/3 77/5<br/>78/5 89/5 105/16 107/10<br/>117/6 120/9 122/22 131/22<br/>131/22 132/9 151/11 151/17<br/>187/14 199/19 199/24<br/>211/18 217/19 220/4<br/>222/19 223/15 228/5<br/>228/8 229/22 240/8<br/>243/3 243/5 260/5 260/12<br/>260/18</p> <p><b>sometimes [5]</b> 66/13 92/5<br/>153/1 214/14 249/10</p> <p><b>somewhat [2]</b> 48/11 66/19</p> <p><b>somewhere [3]</b> 125/25<br/>139/15 178/18</p> <p><b>sons [1]</b> 5/22</p> <p><b>soon [1]</b> 74/14</p> <p><b>sorry [19]</b> 12/9 19/13<br/>38/14 45/12 77/9 81/12<br/>85/23 100/2 120/10<br/>133/20 138/21 145/17<br/>165/6 165/10 182/7 196/12</p> | <p>203/17 209/7 255/4<br/><b>sort [11]</b> 66/13 84/1 89/16<br/>152/22 155/4 173/19 216/4<br/>216/23 218/16 219/22<br/>235/12</p> <p><b>sorting [1]</b> 73/17</p> <p><b>sorts [2]</b> 13/16 80/4</p> <p><b>sound [3]</b> 24/4 66/3<br/>148/22</p> <p><b>sounds [6]</b> 25/1 66/7<br/>73/22 88/14 98/3 105/10</p> <p><b>source [1]</b> 143/20</p> <p><b>sources [2]</b> 214/15 220/2</p> <p><b>Southern [1]</b> 205/16</p> <p><b>speak [7]</b> 79/22 94/9<br/>116/9 116/18 129/10 172/16<br/>173/3</p> <p><b>speaking [2]</b> 180/8 192/21</p> <p><b>speaks [4]</b> 97/6 97/8<br/>97/11 132/3</p> <p><b>special [1]</b> 10/24</p> <p><b>specialized [8]</b> 20/1 30/7<br/>30/10 43/8 50/6 63/15<br/>75/17 83/3</p> <p><b>specific [15]</b> 14/2 14/13<br/>20/15 46/1 50/23 101/10<br/>116/1 136/3 136/8 150/15<br/>152/13 161/15 176/21 182/5<br/>215/9</p> <p><b>specifically [28]</b> 20/16<br/>52/13 58/25 59/10 61/20<br/>63/18 82/25 93/8 96/4<br/>99/17 113/23 118/4 118/5<br/>120/12 130/20 149/19<br/>152/9 162/1 164/19 168/4<br/>172/4 172/14 174/7 175/24<br/>179/18 204/9 205/4<br/>242/10</p> <p><b>speed [77]</b> 21/16 21/23<br/>21/25 24/1 24/2 24/4 24/5<br/>25/14 64/2 70/21 70/23<br/>88/5 92/20 93/2 93/4</p> |
|--|---|--|

|                                  |                                 |                                   |
|----------------------------------|---------------------------------|-----------------------------------|
| <b>S</b>                         | <b>stabilizer [48]</b> 74/24    | 144/21 163/13 174/19              |
| <b>speed...</b> [62] 93/8 93/20  | 128/9 141/10 141/24 142/5       | 233/22 234/9 247/3                |
| 94/2 94/24 96/17 97/16           | 142/5 142/7 142/17 158/21       | <b>started [4]</b> 7/5 64/7       |
| 98/17 101/12 102/16 106/8        | 159/1 160/21 160/23             | 89/10 158/12                      |
| 112/20 114/4 119/18 120/22       | 160/25 161/5 161/12 161/13      | <b>starting [3]</b> 81/11 137/20  |
| 125/20 128/20 129/8              | 161/21 162/5 162/12             | 177/12                            |
| 129/19 130/5 130/9 130/18        | 162/23 163/3 163/8 163/14       | <b>startle [8]</b> 77/5 77/7 77/8 |
| 132/6 132/15 134/9 134/14        | 163/19 164/10 164/22            | 77/11 77/13 77/19 77/23           |
| 135/4 135/12 170/25 171/4        | 166/18 166/22 169/3             | 78/3                              |
| 172/13 173/25 174/4 178/4        | 169/23 172/23 173/1             | <b>startled [2]</b> 77/6 78/8     |
| 186/4 187/20 188/3 212/16        | 173/11 192/22 223/25            | <b>starts [3]</b> 81/13 165/6     |
| 221/8 224/15 224/19              | 224/4 224/24 229/1              | 165/15                            |
| 229/3 229/6 229/17               | 231/12 231/12 232/6             | <b>state [3]</b> 7/8 103/5 151/9  |
| 229/19 230/1 231/22              | 232/9 232/11 239/6 239/8        | <b>stated [2]</b> 60/10 189/25    |
| 236/23 237/8 237/17              | 239/12 239/25 240/6             | <b>statement [64]</b> 18/5 18/9   |
| 237/24 238/7 238/25              | <b>Stacey [18]</b> 32/17 33/2   | 20/22 23/11 23/14 25/3            |
| 239/2 239/3 239/10               | 33/18 35/6 35/9 35/18           | 25/9 25/19 27/25 36/9             |
| 241/15 243/7 254/17              | 36/1 36/2 38/1 43/3 44/6        | 41/4 41/6 44/22 59/13             |
| 255/14 259/15 259/16             | 44/12 107/22 108/14             | 90/21 90/23 91/11 92/17           |
| 260/3                            | 123/17 243/25 256/4             | 93/1 93/6 93/9 93/11              |
| <b>speeds [7]</b> 92/1 93/23     | 256/15                          | 93/17 93/18 94/3 95/11            |
| 94/11 129/5 169/5 171/10         | <b>stage [5]</b> 19/20 20/20    | 96/19 97/10 97/13 97/21           |
| 171/11                           | 55/20 65/6 67/6                 | 98/23 99/10 118/18 119/7          |
| <b>spelling [1]</b> 7/9          | <b>stages [1]</b> 207/22        | 121/23 122/5 122/15               |
| <b>spend [2]</b> 60/1 260/11     | <b>stall [2]</b> 68/12 169/6    | 122/17 124/2 124/3 130/21         |
| <b>spent [1]</b> 202/1           | <b>stalling [1]</b> 22/25       | 131/2 171/14 171/21 177/12        |
| <b>spin [1]</b> 188/11           | <b>stand [1]</b> 251/18         | 177/20 185/25 186/8               |
| <b>spinning [2]</b> 187/2 187/25 | <b>standard [21]</b> 17/7 47/14 | 210/12 210/22 210/24              |
| <b>spoke [2]</b> 94/23 242/15    | 48/7 124/12 124/15 142/5        | 212/5 226/12 226/14               |
| <b>sponsor [1]</b> 215/17        | 199/23 215/13 218/5             | 234/1 234/12 235/9 239/1          |
| <b>spreadsheet [1]</b> 113/3     | 232/24 234/4 239/23             | 240/11 240/13 241/2               |
| <b>square [1]</b> 210/7          | 242/21 249/25 250/19            | 244/2 244/5 257/25                |
| <b>squarely [1]</b> 42/15        | 251/20 251/20 252/1             | <b>statements [4]</b> 3/9 39/12   |
| <b>St. [2]</b> 157/3 242/14      | 253/25 256/18 256/22            | 154/18 241/5                      |
| <b>St. Germain [1]</b> 157/3     | <b>standards [2]</b> 246/22     | <b>Statements.....39 [1]</b>      |
| <b>St. Germain's [1]</b> 242/14  | 254/1                           | 4/19                              |
| <b>stab [11]</b> 141/19 141/23   | <b>standing [4]</b> 41/16 200/2 | <b>states [37]</b> 1/1 1/6 1/14   |
| 142/7 142/11 142/20              | 242/24 259/3                    | 1/19 6/7 15/16 19/14 33/14        |
| 159/19 192/23 224/1              | <b>standpoint [1]</b> 154/7     | 34/11 35/22 36/17 38/11           |
| 224/25 225/14 232/10             | <b>stands [1]</b> 125/3         | 39/23 39/24 40/5 40/20            |
| <b>stability [1]</b> 21/9        | <b>start [11]</b> 9/5 126/2     | 41/3 45/15 46/23 48/7             |
| <b>stabilized [1]</b> 159/7      | 134/18 134/18 144/8             | 110/10 127/15 135/24              |

|                                    |                                   |                                   |
|------------------------------------|-----------------------------------|-----------------------------------|
| <b>S</b>                           | 125/19 127/7 169/14               | 119/19 127/4                      |
| <b>states...</b> [14] 159/22       | <b>stop</b> [15] 21/11 68/17      | <b>substantiated</b> [1] 147/21   |
| 204/9 205/4 205/14                 | 68/25 69/23 89/18 117/21          | <b>substantiates</b> [1] 55/5     |
| 211/10 227/9 227/10                | 125/12 161/12 163/4 163/19        | <b>substantive</b> [2] 86/25      |
| 227/12 246/18 246/23               | 164/21 166/19 166/24              | 244/20                            |
| 255/19 256/6 258/14                | 190/13 252/19                     | <b>subsumed</b> [1] 213/9         |
| 262/14                             | <b>stopped</b> [2] 158/2 163/11   | <b>subtract</b> [1] 234/5         |
| <b>status</b> [1] 195/21           | <b>stops</b> [2] 74/25 160/5      | <b>success</b> [2] 193/25 194/6   |
| <b>statute</b> [1] 204/5           | <b>Storesund</b> [5] 6/10 6/23    | <b>successful</b> [3] 194/4 194/8 |
| <b>steep</b> [5] 22/18 168/15      | 7/1 82/2 191/15                   | 221/25                            |
| 169/4 169/24 170/9                 | <b>story</b> [1] 198/24           | <b>successfully</b> [5] 46/6 70/2 |
| <b>steering</b> [1] 68/10          | <b>straight</b> [3] 71/25 106/4   | 192/11 192/15 200/19              |
| <b>step</b> [4] 27/22 160/18       | 221/3                             | <b>succinct</b> [1] 170/16        |
| 196/4 197/16                       | <b>straightforward</b> [1] 150/5  | <b>such</b> [25] 26/6 26/8 27/1   |
| <b>steps</b> [3] 189/20 198/7      | <b>Street</b> [5] 2/11 2/13 2/18  | 28/25 32/19 42/7 48/13            |
| 227/8                              | 2/24 262/20                       | 48/23 49/17 51/5 54/18            |
| <b>stick</b> [13] 26/17 26/21      | <b>stress</b> [2] 53/10 53/19     | 69/12 72/7 72/25 74/12            |
| 68/7 68/11 71/3 130/23             | <b>stressing</b> [1] 56/19        | 105/6 106/17 147/14 151/18        |
| 141/13 178/16 213/15               | <b>strictly</b> [2] 22/5 42/2     | 152/24 186/15 187/20              |
| 222/25 223/3 223/5                 | <b>strong</b> [4] 62/1 65/14      | 194/18 214/17 237/23              |
| 223/13                             | 65/15 186/7                       | <b>suddenly</b> [2] 69/22 258/7   |
| <b>sticks</b> [1] 130/24           | <b>strongest</b> [1] 32/15        | <b>suffered</b> [2] 59/17 201/23  |
| <b>still</b> [27] 30/6 37/3 37/4   | <b>strongly</b> [1] 244/10        | <b>sufficiency</b> [1] 252/17     |
| 72/10 101/5 101/14 101/19          | <b>struggle</b> [1] 72/18         | <b>sufficient</b> [6] 34/22 34/23 |
| 114/23 122/22 124/8 134/1          | <b>stuck</b> [2] 54/23 55/8       | 35/1 126/18 217/21 253/3          |
| 146/16 161/25 162/2 166/3          | <b>Stumo</b> [2] 5/20 5/21        | <b>suggest</b> [5] 91/17 95/3     |
| 166/6 168/14 168/15                | <b>stupidity</b> [1] 61/7         | 107/2 135/11 204/8                |
| 189/21 191/2 217/20 222/4          | <b>subject</b> [6] 41/22 116/15   | <b>suggested</b> [3] 191/23       |
| 223/11 224/22 227/8                | 127/25 146/4 194/9                | 194/25 196/23                     |
| 227/20 230/1                       | 237/25                            | <b>suggesting</b> [4] 36/12       |
| <b>stipulate</b> [2] 79/21 155/20  | <b>submit</b> [17] 39/3 204/19    | 105/11 192/21 227/19              |
| <b>stipulated</b> [6] 36/9 90/21   | 205/10 205/14 206/7               | <b>suit</b> [1] 49/21             |
| 97/16 155/16 207/6                 | 214/17 220/13 220/23              | <b>Suite</b> [2] 2/13 2/24        |
| 207/20                             | 222/3 223/17 224/5                | <b>sum</b> [1] 24/25              |
| <b>stipulation</b> [2] 79/16 79/22 | 225/23 226/2 226/13               | <b>summaries</b> [2] 214/11       |
| <b>stipulations</b> [2] 37/7 215/4 | 226/18 231/21 234/18              | 218/12                            |
| <b>stock</b> [4] 206/10 206/11     | <b>submitted</b> [4] 19/6 207/3   | <b>summarize</b> [3] 6/14 43/1    |
| 206/12 214/18                      | 209/2 218/15                      | 219/19                            |
| <b>Stone</b> [2] 54/24 55/9        | <b>subsequent</b> [3] 95/1 176/18 | <b>summarizes</b> [1] 31/22       |
| <b>stood</b> [3] 151/11 151/17     | 190/4                             | <b>summarizing</b> [1] 217/18     |
| 247/5                              | <b>subsequently</b> [1] 76/15     | <b>summary</b> [4] 4/17 213/17    |
| <b>stool</b> [5] 105/1 105/7       | <b>substantial</b> [3] 105/6      | 219/14 219/14                     |



|  |  |  |
|--|--|--|
| <p><b>S</b></p> <p><b>super</b> [1] 102/20</p> <p><b>supervised</b> [1] 14/24</p> <p><b>support</b> [13] 43/10 43/13 43/16 43/20 43/23 44/1 44/2 44/8 54/19 147/17 189/8 197/14 226/7</p> <p><b>supported</b> [1] 76/21</p> <p><b>supporting</b> [1] 205/2</p> <p><b>supportive</b> [4] 44/9 44/15 44/18 62/9</p> <p><b>supports</b> [1] 43/7</p> <p><b>supposed</b> [6] 35/11 35/13 45/7 45/24 98/14 113/3</p> <p><b>suppression</b> [1] 215/11</p> <p><b>Supreme</b> [3] 204/8 204/10 245/14</p> <p><b>sure</b> [24] 10/1 22/22 58/11 74/23 97/24 100/1 100/3 101/11 101/25 107/18 107/19 108/2 114/21 149/22 151/17 158/22 165/1 165/3 172/5 172/8 215/12 227/5 229/24 231/19</p> <p><b>surely</b> [2] 211/2 211/9</p> <p><b>surges</b> [1] 84/17</p> <p><b>surprised</b> [1] 78/8</p> <p><b>surrounding</b> [2] 20/12 31/23</p> <p><b>Susan</b> [1] 5/22</p> <p><b>susceptible</b> [1] 88/8</p> <p><b>suspected</b> [1] 32/21</p> <p><b>sustained</b> [1] 75/6</p> <p><b>switch</b> [14] 141/23 142/8 142/17 163/10 164/21 223/25 224/1 225/14 228/25 229/1 229/5 229/10 232/9 232/10</p> <p><b>switches</b> [18] 74/20 74/25 89/9 89/12 89/14 89/24 90/6 141/10 142/11 142/20</p> | <p>159/17 160/19 163/3 163/18 166/20 166/23 192/22 224/25</p> <p><b>swore</b> [1] 150/9</p> <p><b>sworn</b> [1] 35/6</p> <p><b>synonym</b> [1] 78/9</p> <p><b>synopsis</b> [13] 136/18 136/21 137/1 137/4 138/17 138/24 138/25 139/5 140/6 141/7 141/21 222/16 222/24</p> <p><b>system</b> [50] 20/5 20/7 26/5 26/8 29/1 29/2 29/3 29/7 46/1 46/3 46/6 64/2 69/19 73/4 74/7 75/14 75/23 76/1 77/17 89/6 95/16 96/1 107/11 119/22 120/5 121/3 121/7 121/12 126/19 128/23 133/13 134/5 143/13 151/16 159/11 162/3 166/7 167/2 168/5 171/8 172/19 173/4 175/17 181/8 187/12 187/25 189/17 190/2 224/12 231/10</p> <p><b>systems</b> [5] 10/6 30/9 114/24 167/22 222/18</p> <hr/> <p><b>T</b></p> <p><b>table</b> [2] 15/15 113/3</p> <p><b>tables</b> [1] 191/9</p> <p><b>tactical</b> [1] 116/2</p> <p><b>tactile</b> [2] 23/2 70/8</p> <p><b>tail</b> [2] 22/14 138/13</p> <p><b>take</b> [45] 5/12 6/14 8/24 19/24 29/20 37/16 67/8 68/22 74/25 78/22 78/23 81/17 81/17 81/22 82/13 82/23 83/23 93/7 109/25 116/8 117/14 121/7 124/7 124/9 127/4 144/7 156/20 157/10 160/15 165/22 165/24 170/8 170/22 185/1</p> | <p>191/5 191/6 196/17 203/16 209/24 211/5 227/17 254/10 256/15 261/7 261/8</p> <p><b>take-away</b> [1] 170/8</p> <p><b>taken</b> [5] 83/2 83/25 129/4 193/2 212/25</p> <p><b>takeoff</b> [6] 62/15 77/15 83/9 83/10 98/21 222/21</p> <p><b>takes</b> [1] 42/5</p> <p><b>taking</b> [9] 77/17 114/20 115/7 117/8 144/11 175/21 211/23 222/17 256/10</p> <p><b>talk</b> [22] 12/10 17/10 27/3 44/21 45/5 48/15 50/12 66/16 66/19 70/8 78/18 78/19 161/8 162/17 178/20 198/6 200/15 202/8 203/8 208/16 242/11 250/24</p> <p><b>talked</b> [18] 31/2 52/15 72/13 84/3 84/4 94/10 95/6 96/11 109/5 119/4 136/20 162/8 169/13 178/1 182/13 185/10 211/17 239/6</p> <p><b>talking</b> [33] 8/21 16/22 17/2 47/17 59/8 63/10 80/2 82/17 87/18 91/4 94/1 104/14 105/11 106/21 109/4 110/9 112/9 112/13 112/15 125/19 129/24 130/2 130/12 130/18 138/13 138/15 143/12 179/18 187/18 190/14 229/7 242/12 244/1</p> <p><b>talks</b> [2] 25/9 95/21</p> <p><b>tape</b> [1] 70/22</p> <p><b>tapes</b> [1] 70/23</p> <p><b>TARAM</b> [1] 260/13</p> <p><b>task</b> [1] 73/19</p> <p><b>TCCA's</b> [1] 58/6</p> <p><b>team</b> [3] 9/18 106/25 111/1</p> |
|--|--|--|

|                                   |                                 |                                   |
|-----------------------------------|---------------------------------|-----------------------------------|
| <b>T</b>                          | 87/20 87/25 91/21 109/2         | 153/11 153/11 153/15              |
| <b>technical [16]</b> 55/22 56/4  | 112/12 122/6 122/8 122/21       | 153/22 156/14 156/17              |
| 56/15 57/8 90/24 105/24           | 134/11 134/12 135/19 136/5      | 157/2 163/25 167/8 169/14         |
| 107/7 107/13 114/12 115/1         | 140/3 142/13 142/16 145/1       | 178/10 181/17 185/10 192/9        |
| 115/9 119/24 120/17 121/2         | 145/24 146/2 149/14             | 194/25 198/19 199/15              |
| 132/10 207/9                      | 151/20 157/5 159/14             | 214/14 223/2 230/2 230/8          |
| <b>techs [1]</b> 92/4             | 159/21 171/13 179/7             | 242/14 243/25 244/13              |
| <b>telephone [8]</b> 1/21 2/6 2/9 | 180/20 184/6 184/7 184/21       | 245/3 248/9 248/12                |
| 2/14 2/19 2/22 2/25 112/1         | 184/22 208/11 239/14            | 248/15 250/13 250/13              |
| <b>tell [18]</b> 9/24 10/15 13/11 | 242/3 242/9 246/15              | 250/15 250/21 258/2               |
| 13/16 25/12 43/6 64/7             | 247/10 247/15 249/18            | <b>testing [4]</b> 10/7 10/9 22/1 |
| 71/4 72/20 72/21 165/25           | 249/19 250/17 250/18            | 209/15                            |
| 186/22 192/14 241/14              | 255/25 256/2                    | <b>TEXAS [11]</b> 1/2 1/7 2/14    |
| 249/15 251/18 256/17              | <b>testify [16]</b> 42/18 99/16 | 2/24 202/10 205/16 220/7          |
| 259/8                             | 171/6 182/18 183/19 183/21      | 252/5 259/9 262/18                |
| <b>teller [1]</b> 234/22          | 184/8 184/11 184/15 185/2       | 262/20                            |
| <b>telling [5]</b> 164/16 198/25  | 185/4 219/21 219/25             | <b>than [30]</b> 30/5 40/16       |
| 224/23 232/20 237/23              | 240/24 241/4 247/18             | 46/24 47/8 63/25 79/4             |
| <b>ten [1]</b> 244/14             | <b>testifying [2]</b> 144/22    | 86/17 91/12 115/10 140/22         |
| <b>tend [5]</b> 12/14 47/6 52/11  | 180/18                          | 172/16 190/5 192/8 193/15         |
| 87/21 201/5                       | <b>testimony [115]</b> 6/9 6/14 | 195/22 196/18 196/19              |
| <b>tended [1]</b> 50/22           | 6/24 7/2 15/7 15/19 19/11       | 205/17 206/6 206/7                |
| <b>term [3]</b> 154/12 184/1      | 19/13 21/14 28/7 32/16          | 212/25 231/9 240/18               |
| 184/3                             | 32/23 33/1 33/4 33/18           | 241/18 254/12 255/6               |
| <b>terms [9]</b> 12/14 50/23      | 34/10 35/6 35/9 35/19           | 255/24 256/21 260/17              |
| 74/13 99/18 108/8 152/11          | 35/23 35/25 36/24 37/25         | 260/21                            |
| 204/20 205/24 218/17              | 38/18 38/19 38/21 39/1          | <b>thank [53]</b> 6/3 12/13 17/20 |
| <b>terrain [1]</b> 83/18          | 39/7 42/20 42/23 44/7           | 53/3 62/10 81/19 85/14            |
| <b>terrified [1]</b> 85/7         | 44/17 50/13 65/1 80/11          | 85/16 90/8 100/5 105/21           |
| <b>terrifying [2]</b> 85/4 85/6   | 82/6 85/14 91/17 91/21          | 110/6 111/14 144/4 144/5          |
| <b>test [24]</b> 9/11 9/18 21/9   | 91/23 99/17 105/18 108/8        | 144/6 146/25 147/8 148/16         |
| 22/1 22/16 22/23 23/2             | 108/9 108/18 109/3 110/11       | 152/15 154/22 154/23              |
| 107/13 113/7 114/8 114/11         | 116/21 117/4 122/10 123/12      | 160/20 162/19 167/6 167/7         |
| 114/16 114/17 114/22 115/4        | 123/17 123/18 130/3             | 174/21 177/18 177/23              |
| 115/8 115/10 120/16 123/8         | 135/25 136/2 136/8 136/9        | 183/9 183/10 184/4 184/25         |
| 207/9 230/15 230/18               | 144/24 145/21 147/11            | 185/18 185/19 185/20              |
| 230/20 252/11                     | 147/17 149/24 150/2 150/9       | 191/10 191/20 192/3 192/4         |
| <b>tested [3]</b> 47/23 147/25    | 150/12 150/14 150/24            | 196/2 196/5 196/14 197/7          |
| 218/20                            | 150/25 151/3 151/7 151/14       | 203/22 220/8 233/12               |
| <b>testified [53]</b> 32/17 37/2  | 151/19 151/21 151/25 152/1      | 233/13 233/14 243/12              |
| 40/17 40/19 54/20 86/8            | 152/3 152/10 152/13             | 243/13 261/6 261/10               |
| 86/13 86/14 86/19 87/6            | 152/18 152/25 153/3             | <b>Thanks [1]</b> 45/25           |

|                                |                                  |                               |
|--------------------------------|----------------------------------|-------------------------------|
| <b>T</b>                       | 189/14 190/14 190/18             | 236/15 237/1 237/2 237/5      |
| <b>that [1871]</b>             | 192/13 192/24 193/6 193/7        | 237/9 239/5 240/20            |
| <b>that one [1]</b> 29/22      | 194/5 195/14 196/1 196/11        | 240/22 240/25 241/2           |
| <b>that's [220]</b> 7/13 15/13 | 199/24 201/6 201/13              | 246/24 248/22 250/12          |
| 18/13 19/1 19/15 19/18         | 202/3 202/6 202/14               | 250/21 259/3 260/21           |
| 23/4 23/4 23/10 24/10          | 202/17 203/10 203/11             | <b>theirs [1]</b> 223/10      |
| 24/14 25/4 26/22 27/6          | 204/22 204/23 205/10             | <b>them [65]</b> 6/25 9/3 9/4 |
| 28/14 30/10 32/25 33/4         | 206/13 206/23 208/17             | 9/5 17/15 17/17 17/18         |
| 33/11 33/14 33/16 34/8         | 208/22 209/4 210/24              | 17/19 26/15 26/15 34/2        |
| 47/17 47/18 47/20 55/11        | 214/15 214/16 214/23             | 49/8 51/24 53/1 58/15         |
| 55/13 58/10 58/12 59/12        | 215/3 215/12 216/3 216/9         | 61/21 66/16 67/8 72/7         |
| 59/22 60/4 60/17 66/15         | 218/4 218/25 219/7 219/14        | 80/17 85/9 88/24 92/24        |
| 67/24 68/19 71/19 81/2         | 219/14 220/4 222/22              | 93/21 93/23 97/1 100/16       |
| 87/5 87/6 88/16 90/22          | 224/15 228/13 229/21             | 101/18 111/12 111/17 111/23   |
| 90/23 91/10 92/2 93/16         | 229/22 230/16 231/22             | 119/4 124/20 129/12           |
| 94/11 94/19 95/1 96/14         | 235/6 235/7 236/1 236/11         | 134/23 138/20 154/1 156/9     |
| 97/9 97/12 97/25 98/21         | 236/12 236/18 236/25             | 159/9 171/10 174/7 174/8      |
| 99/24 102/7 102/21 104/7       | 237/3 237/4 237/5 238/2          | 176/16 181/13 202/22          |
| 104/13 104/19 105/18 107/1     | 238/5 238/16 238/25              | 217/13 223/16 235/20          |
| 109/9 112/25 113/9 114/7       | 242/13 242/20 242/21             | 235/22 236/18 237/7           |
| 117/23 118/17 118/23 119/3     | 245/2 245/9 245/16 247/2         | 237/24 238/8 240/21           |
| 120/18 120/23 121/13           | 247/15 248/25 249/9              | 244/25 246/3 246/3            |
| 124/4 124/18 124/18            | 251/11 253/22 255/15             | 246/9 248/7 250/11            |
| 124/24 125/25 126/1 127/5      | 258/13 258/18 260/18             | 251/21 254/12 257/24          |
| 128/7 130/1 130/6 130/20       | 261/4                            | 258/21 260/19                 |
| 131/13 132/22 133/5            | <b>their [77]</b> 5/20 5/22 10/4 | <b>theme [1]</b> 248/23       |
| 136/13 136/24 138/5            | 47/15 49/13 50/9 51/16           | <b>themselves [1]</b> 200/24  |
| 138/20 138/21 139/4            | 58/7 60/10 61/7 62/4 63/1        | <b>then [109]</b> 13/9 13/17  |
| 139/11 140/10 141/14           | 63/16 68/20 69/19 69/23          | 14/14 14/20 16/10 19/19       |
| 141/21 142/1 142/2 142/4       | 74/6 74/7 74/15 77/17            | 19/24 24/13 26/13 27/3        |
| 142/9 142/19 146/11 147/4      | 83/19 86/19 96/8 104/6           | 27/15 31/3 34/8 35/24         |
| 148/15 155/13 156/13           | 109/17 109/23 110/19             | 38/24 48/9 49/14 55/12        |
| 160/6 160/21 162/14 165/4      | 119/23 119/23 128/14             | 66/8 67/21 70/9 74/9          |
| 165/6 166/21 167/10            | 146/8 170/8 170/23 171/11        | 74/24 78/17 78/18 79/13       |
| 168/23 168/25 169/19           | 173/3 173/21 174/25              | 81/10 82/9 85/3 89/19         |
| 171/16 175/6 175/9 175/12      | 175/18 176/17 181/8 181/11       | 89/21 90/20 102/13 103/4      |
| 177/12 178/20 178/20           | 181/14 182/24 183/2 186/11       | 103/9 105/2 109/16 113/6      |
| 181/1 182/12 182/22 184/14     | 193/17 194/14 194/24             | 119/21 120/18 125/3 137/15    |
| 184/17 184/19 184/24           | 199/5 202/23 216/19              | 137/22 142/8 148/1 151/20     |
| 186/9 186/10 186/14            | 220/2 221/13 221/14              | 155/24 157/8 157/16 158/3     |
| 187/14 188/10 188/12           | 221/18 223/15 225/9              | 158/3 158/8 159/10 159/18     |
| 188/20 188/22 189/2            | 230/7 232/4 234/3 235/16         | 160/5 160/9 160/14 160/16     |

|   |   |   |
|---|---|---|
| <p><b>T</b><br/> <b>then...</b> [51] 160/19 163/21<br/> 164/16 165/15 165/16<br/> 167/3 168/14 169/14 171/8<br/> 171/9 175/22 187/22<br/> 193/25 196/20 197/16<br/> 197/23 199/7 199/20<br/> 201/10 203/13 203/18<br/> 204/17 205/13 206/2<br/> 206/3 206/24 207/6<br/> 207/15 209/19 216/14<br/> 217/18 218/21 219/21<br/> 220/2 224/14 226/1<br/> 228/21 229/3 238/17<br/> 240/2 241/4 243/19<br/> 249/20 250/12 250/22<br/> 253/19 256/7 257/2 257/8<br/> 259/5 260/7<br/> <b>theory</b> [1] 194/11<br/> <b>there</b> [175] 6/22 9/21<br/> 10/17 15/23 17/19 20/23<br/> 21/11 24/1 24/5 24/20<br/> 25/5 29/15 31/3 31/21<br/> 36/4 41/20 42/11 48/18<br/> 49/5 51/19 53/10 53/20<br/> 53/24 54/12 54/25 56/23<br/> 60/8 60/22 61/9 62/18<br/> 62/21 63/6 65/13 66/16<br/> 68/6 68/14 68/17 68/25<br/> 70/10 70/14 71/14 72/16<br/> 73/6 74/13 79/15 85/1<br/> 88/23 91/16 91/17 95/16<br/> 100/22 104/23 104/24<br/> 110/24 110/25 111/9 114/20<br/> 114/21 116/2 117/5 117/9<br/> 120/11 123/8 123/12<br/> 126/20 126/23 129/21<br/> 130/11 135/1 136/2 136/11<br/> 136/15 136/15 137/15<br/> 138/18 138/22 141/2<br/> 143/14 145/12 145/13<br/> 146/3 147/19 148/6 148/8</p> | <p>162/2 162/4 162/23 163/7<br/> 163/8 163/11 164/7 164/9<br/> 164/10 165/21 172/15<br/> 176/22 176/23 177/13<br/> 178/15 182/13 182/16<br/> 184/23 186/19 189/5 189/6<br/> 189/20 189/23 190/13<br/> 192/10 192/11 192/17 193/4<br/> 193/13 194/7 195/8 200/16<br/> 201/9 203/19 203/21<br/> 204/22 204/23 205/8<br/> 206/4 206/10 206/21<br/> 207/2 208/19 209/12<br/> 209/15 209/16 209/18<br/> 209/19 210/14 210/25<br/> 211/2 211/3 212/16 213/22<br/> 213/22 220/15 221/3<br/> 222/12 222/14 224/21<br/> 225/2 225/6 225/11<br/> 225/15 227/19 229/13<br/> 230/10 230/20 230/21<br/> 233/23 234/25 236/19<br/> 236/20 236/21 240/13<br/> 241/10 242/4 242/10<br/> 242/19 242/25 244/3<br/> 244/24 246/16 247/12<br/> 247/16 247/20 247/22<br/> 249/17 256/24 257/11<br/> 260/12<br/> <b>there's</b> [79] 6/9 13/2<br/> 18/23 23/11 26/12 30/6<br/> 31/25 36/3 36/9 46/11<br/> 55/7 55/12 56/25 57/21<br/> 64/3 66/8 72/25 73/10<br/> 89/16 90/4 97/6 97/8<br/> 97/10 99/10 100/22 110/22<br/> 111/12 111/16 119/7 122/7<br/> 127/20 131/10 131/24<br/> 134/16 136/14 142/13<br/> 142/15 152/21 152/23<br/> 152/24 160/24 172/10<br/> 176/25 186/19 197/11</p> | <p>199/18 201/25 207/17<br/> 209/11 212/15 213/10<br/> 217/15 218/21 219/8<br/> 219/16 221/12 221/18<br/> 227/1 227/7 228/1 231/9<br/> 232/24 234/11 235/10<br/> 236/19 237/12 237/17<br/> 237/23 238/13 240/11<br/> 241/24 242/11 242/16<br/> 250/25 251/7 251/14<br/> 255/7 256/3 257/11<br/> <b>therefore</b> [4] 38/11 216/17<br/> 231/6 234/16<br/> <b>these</b> [74] 6/11 13/25<br/> 16/22 16/24 27/7 33/1<br/> 34/1 37/6 43/6 50/16<br/> 52/11 58/11 64/12 65/11<br/> 66/11 69/22 71/22 72/6<br/> 72/11 74/4 75/5 76/19<br/> 77/14 78/1 80/16 92/5<br/> 100/14 100/15 100/19<br/> 103/9 104/12 107/23 120/2<br/> 120/4 122/24 125/1 147/1<br/> 149/1 167/9 171/17 177/14<br/> 190/4 190/6 191/8 203/1<br/> 208/20 209/5 211/16<br/> 213/7 213/8 213/8 214/6<br/> 215/21 216/9 216/24 222/1<br/> 223/20 228/3 228/23<br/> 230/6 230/11 230/24<br/> 232/23 233/24 234/2<br/> 236/2 236/14 236/19<br/> 238/9 240/7 246/11 255/8<br/> 258/12 259/5<br/> <b>they</b> [298]<br/> <b>they'd</b> [1] 76/5<br/> <b>they're</b> [24] 6/13 12/23<br/> 73/12 114/22 115/4 116/5<br/> 116/7 116/10 116/14 116/17<br/> 145/18 147/4 154/8 155/3<br/> 155/16 177/1 194/22<br/> 204/18 217/11 217/17</p> |
|---|---|---|



|                                 |                            |                                 |
|---------------------------------|----------------------------|---------------------------------|
| <b>T</b>                        | 76/18 77/3 78/14 78/21     | 233/23 234/11 235/15            |
| <b>they're...</b> [4] 219/17    | 82/1 82/3 82/8 82/11       | 236/3 237/12 237/17             |
| 236/3 244/2 245/1               | 82/13 84/11 84/22 84/25    | 238/14 240/16 243/20            |
| <b>they've</b> [5] 109/14 154/7 | 85/12 89/1 89/2 91/20      | 244/7 244/22 245/2              |
| 155/15 236/12 236/13            | 93/18 93/24 94/1 94/8      | 245/9 246/5 246/5 246/17        |
| <b>thing</b> [38] 16/21 41/19   | 94/13 94/21 95/20 101/22   | 247/5 249/24 250/9              |
| 51/18 55/6 61/2 66/14           | 103/12 104/13 104/21       | 250/19 250/25 251/7             |
| 68/5 68/19 72/4 108/6           | 105/15 105/21 106/18       | 251/12 251/24 252/1             |
| 120/19 122/20 129/16            | 108/6 108/9 109/21 111/19  | 252/5 253/16 253/18             |
| 130/3 130/20 132/19 134/7       | 119/12 120/19 121/25       | 254/14 254/18 254/22            |
| 134/13 135/5 135/16 142/2       | 122/10 122/18 122/22       | 255/3 255/4 255/17              |
| 151/18 153/14 166/10            | 122/23 123/18 123/22       | 255/20 256/4 256/5              |
| 188/24 198/17 215/12            | 124/8 125/12 126/4 126/6   | 256/20 257/11 257/19            |
| 216/3 219/19 235/12             | 126/7 126/11 129/16 131/22 | 258/4 259/10                    |
| 237/23 237/25 243/6             | 132/3 132/23 135/10        | <b>thinking</b> [3] 55/8 145/23 |
| 248/18 248/25 251/17            | 136/13 137/19 141/15       | 222/18                          |
| 257/20 260/22                   | 142/13 142/15 145/4 145/9  | <b>thinks</b> [1] 92/2          |
| <b>things</b> [53] 8/11 11/13   | 148/15 148/21 151/9 152/21 | <b>third</b> [16] 16/13 24/13   |
| 14/13 32/1 36/12 45/24          | 153/15 153/15 155/4 156/2  | 50/3 50/4 50/7 65/5 65/6        |
| 49/1 49/2 49/18 52/15           | 159/20 161/23 163/17       | 98/10 139/8 140/23 184/2        |
| 59/9 60/16 69/1 70/5            | 165/22 166/2 167/5         | 192/18 193/4 194/5 214/15       |
| 70/10 70/15 73/13 73/18         | 167/25 169/1 171/7 172/15  | 253/8                           |
| 73/24 77/20 80/4 85/3           | 174/2 176/15 176/21 177/11 | <b>third-party</b> [1] 214/15   |
| 89/16 92/6 95/17 98/5           | 181/12 183/19 186/17       | <b>thirst</b> [1] 49/25         |
| 116/4 123/21 132/12             | 186/20 190/13 190/22       | <b>thirsty</b> [1] 49/12        |
| 132/24 133/4 157/1 162/8        | 191/15 193/19 193/21       | <b>this</b> [330]               |
| 189/6 189/18 199/14             | 194/10 194/24 195/12       | <b>those</b> [155] 10/23 11/20  |
| 212/21 214/13 214/14            | 196/23 197/11 197/16       | 11/21 16/3 16/17 18/9           |
| 215/16 217/1 228/7 228/12       | 197/19 198/2 198/11 198/15 | 18/23 19/2 20/25 22/14          |
| 236/2 237/12 238/6              | 199/14 199/24 200/21       | 23/24 24/22 25/1 26/4           |
| 243/21 243/21 243/25            | 201/4 201/10 202/24        | 29/8 32/14 36/8 44/11           |
| 244/3 251/7 251/15 255/7        | 203/15 204/2 204/3         | 49/18 50/19 52/1 52/15          |
| <b>think</b> [223] 6/15 7/14    | 204/12 204/24 205/2        | 52/18 52/23 53/24 54/8          |
| 12/17 15/6 15/10 15/13          | 205/22 206/23 206/24       | 60/12 61/1 66/21 66/23          |
| 15/15 17/2 20/20 25/8           | 207/17 210/1 210/9 212/1   | 70/23 73/8 73/16 74/21          |
| 27/6 29/13 29/18 34/7           | 212/15 212/22 213/24       | 74/23 76/15 76/16 77/20         |
| 36/23 38/9 42/16 45/11          | 214/3 214/5 216/20 216/21  | 78/21 82/8 82/20 84/5           |
| 48/4 48/12 48/19 50/12          | 216/21 217/6 218/17        | 84/20 87/16 89/2 89/14          |
| 50/14 53/7 54/19 55/4           | 218/18 218/21 219/19       | 91/5 94/14 100/13 101/8         |
| 57/21 59/11 60/1 60/3           | 223/19 228/5 228/13        | 101/15 101/17 101/23 105/8      |
| 60/17 63/11 64/23 65/16         | 229/12 229/24 230/8        | 108/17 108/23 110/17            |
| 67/21 68/18 69/3 72/14          | 230/10 230/17 230/24       | 114/24 115/2 116/4 116/5        |

|   |   |  |
|---|---|--|
| <p><b>T</b><br/> <b>those...</b> [94] 117/11 121/18<br/> 122/17 129/1 132/12 140/8<br/> 140/16 142/6 143/24 147/3<br/> 148/18 151/1 152/4 152/13<br/> 153/16 154/5 154/14<br/> 154/15 154/25 155/2 155/7<br/> 155/12 159/7 166/23 170/1<br/> 175/20 175/22 177/4<br/> 181/13 181/16 182/21 183/2<br/> 186/1 187/12 189/3 189/18<br/> 189/24 194/1 194/3 198/2<br/> 199/16 200/12 200/13<br/> 200/17 201/11 201/12<br/> 201/17 201/17 201/22<br/> 202/18 206/20 211/4 211/6<br/> 211/11 216/12 216/12<br/> 216/15 216/16 216/16<br/> 216/22 217/9 220/3 221/6<br/> 221/19 221/25 223/7<br/> 223/24 225/5 228/12<br/> 232/24 233/8 234/12<br/> 235/19 236/11 238/6<br/> 240/11 240/15 242/5<br/> 243/23 244/16 245/4<br/> 245/10 245/23 246/2<br/> 246/8 246/10 246/19<br/> 246/21 246/24 247/18<br/> 249/21 250/1 250/20<br/> 262/13<br/> <b>though</b> [15] 6/13 37/1<br/> 94/2 95/21 99/2 103/12<br/> 105/10 107/19 115/4 122/14<br/> 128/17 138/6 192/11 211/14<br/> 248/7<br/> <b>thought</b> [11] 74/16 79/19<br/> 81/23 92/8 102/12 149/14<br/> 168/22 197/21 198/8<br/> 250/2 251/4<br/> <b>thoughts</b> [1] 35/17<br/> <b>thousand</b> [3] 114/22<br/> 207/11 207/18</p> | <p><b>thousands</b> [1] 78/10<br/> <b>three</b> [49] 5/16 16/2 22/8<br/> 22/14 23/19 23/24 24/22<br/> 25/1 28/8 35/22 42/16<br/> 46/24 53/18 53/24 54/8<br/> 60/22 61/1 65/2 87/24<br/> 98/5 98/14 101/12 101/15<br/> 101/17 101/23 104/25<br/> 119/21 125/19 137/22<br/> 143/21 158/1 158/6 158/7<br/> 169/13 193/22 194/1 194/3<br/> 198/2 198/7 198/17 199/12<br/> 201/15 244/13 245/23<br/> 247/12 247/19 248/11<br/> 248/12 248/13<br/> <b>three-legged</b> [3] 98/14<br/> 125/19 169/13<br/> <b>Throckmorton</b> [1] 2/24<br/> <b>through</b> [44] 8/9 14/14<br/> 17/23 22/3 29/7 37/18<br/> 37/25 39/7 44/24 77/25<br/> 79/10 81/7 82/7 84/21<br/> 84/24 88/24 103/17<br/> 108/15 116/16 126/8 133/1<br/> 146/16 157/13 161/19<br/> 176/25 198/12 201/5<br/> 203/3 214/2 221/16 223/2<br/> 227/12 231/16 234/2<br/> 236/14 240/22 241/2<br/> 243/24 244/18 250/1<br/> 250/5 251/6 252/3 259/10<br/> <b>throughout</b> [1] 224/11<br/> <b>throw</b> [1] 250/11<br/> <b>thrust</b> [2] 131/16 159/25<br/> <b>thus</b> [2] 16/18 65/11<br/> <b>tied</b> [1] 124/15<br/> <b>tier</b> [1] 98/14<br/> <b>time</b> [109] 8/2 10/8 10/25<br/> 11/11 11/18 12/5 12/14<br/> 14/24 25/5 31/9 32/6<br/> 33/19 38/7 41/1 52/21<br/> 59/2 60/2 69/4 71/2 71/15</p> | <p>71/23 72/4 72/8 72/11<br/> 72/11 73/20 79/18 82/4<br/> 82/24 83/1 83/5 83/20<br/> 83/24 83/24 90/14 93/14<br/> 93/16 93/24 96/14 104/11<br/> 104/19 108/10 108/22<br/> 113/20 116/5 116/8 117/10<br/> 117/21 118/17 118/17 119/14<br/> 127/4 129/21 130/2 130/16<br/> 131/12 137/19 143/12 157/7<br/> 157/10 158/12 158/14<br/> 158/19 165/22 165/24<br/> 167/8 167/16 167/18 168/6<br/> 170/7 171/4 171/24 172/3<br/> 172/10 173/6 173/18<br/> 173/20 173/25 174/13<br/> 178/2 188/25 189/21<br/> 190/17 190/20 196/9 202/1<br/> 203/7 203/24 206/12<br/> 206/21 210/5 210/10<br/> 210/24 211/13 212/2 213/3<br/> 215/11 223/6 225/3 231/17<br/> 233/17 241/17 248/7<br/> 256/12 257/9 257/21<br/> 260/10 260/11 260/16<br/> <b>timely</b> [1] 226/22<br/> <b>times</b> [12] 12/7 15/4 15/11<br/> 68/2 68/3 72/5 78/10<br/> 90/2 90/12 109/5 135/22<br/> 214/15<br/> <b>timing</b> [1] 95/2<br/> <b>today</b> [73] 5/13 8/21<br/> 10/25 13/14 13/23 16/1<br/> 17/5 17/8 18/8 28/25<br/> 34/10 35/7 40/6 40/22<br/> 42/24 47/11 52/19 55/3<br/> 56/17 62/8 75/8 76/2<br/> 76/5 77/22 87/6 111/5<br/> 122/10 122/19 130/3 132/2<br/> 136/20 144/22 147/12<br/> 147/17 147/22 148/4<br/> 149/23 152/19 153/10</p> |
|---|---|--|

|                                   |                                  |                                   |
|-----------------------------------|----------------------------------|-----------------------------------|
| <b>T</b>                          | <b>towards [2]</b> 54/20 250/6   | 76/16 76/21 77/24 80/8            |
| <b>today... [34]</b> 153/21       | <b>TRACY [1]</b> 27/10           | 80/14 80/19 83/3 87/2             |
| 156/14 156/18 160/24              | <b>traditional [2]</b> 161/12    | 99/19 116/18 127/18 138/2         |
| 163/25 178/24 180/18              | 166/18                           | 143/13 147/24 148/10              |
| 183/11 187/10 190/14              | <b>tragedies [1]</b> 228/23      | 151/2 152/12 157/13 158/17        |
| 197/10 197/14 198/7 198/9         | <b>tragedy [1]</b> 224/7         | 158/23 166/21 172/21              |
| 198/15 199/5 199/13 201/5         | <b>tragic [2]</b> 216/13 241/17  | 175/11 175/14 175/22              |
| 202/21 207/1 209/8 213/4          | <b>tragically [2]</b> 225/19     | 176/9 176/20 176/25               |
| 219/12 223/2 226/24               | 240/4                            | 177/9 178/12 181/10 181/25        |
| 227/18 227/18 236/8               | <b>train [4]</b> 158/21 183/2    | 182/9 182/10 182/14               |
| 244/18 246/12 246/18              | 225/9 229/21                     | 182/20 182/24 184/8               |
| 248/6 250/3 256/18                | <b>trained [26]</b> 14/7 20/16   | 184/12 185/3 186/22 190/9         |
| <b>today's [3]</b> 8/11 226/21    | 20/18 72/9 74/1 74/3             | 190/16 194/12 194/13              |
| 226/24                            | 74/19 75/24 77/25 83/13          | 195/4 195/8 195/17 195/24         |
| <b>together [2]</b> 245/19        | 83/16 84/14 95/9 128/10          | 198/5 198/8 198/14 198/22         |
| 251/15                            | 142/2 201/12 221/22              | 199/2 199/8 200/5 200/8           |
| <b>told [31]</b> 23/12 40/16      | 224/3 228/12 229/14              | 200/13 200/25 201/13              |
| 40/18 63/18 64/12 92/9            | 231/8 239/7 243/4 253/6          | 221/11 221/11 221/15              |
| 99/5 104/8 111/3 112/24           | 259/14 259/15                    | 221/18 226/23 227/3               |
| 128/8 130/24 157/14               | <b>training [206]</b> 13/25 14/3 | 227/7 227/9 227/18                |
| 172/14 173/24 174/8 178/3         | 14/6 14/14 15/1 16/8 16/17       | 227/21 227/24 228/15              |
| 178/10 178/17 178/19              | 19/22 20/10 20/12 20/15          | 228/18 228/19 228/20              |
| 179/15 179/19 180/13              | 26/2 27/8 27/12 27/16            | 229/4 229/5 229/13                |
| 201/18 232/4 251/21               | 27/19 27/23 29/8 29/12           | 229/13 229/17 229/18              |
| 255/19 255/25 256/1               | 29/14 29/16 29/23 30/1           | 229/19 229/19 236/16              |
| 259/18 260/19                     | 30/7 30/7 30/8 30/10             | 236/20 236/21 236/24              |
| <b>too [7]</b> 41/14 60/1 136/9   | 30/16 30/19 30/24 31/6           | 237/4 237/10 239/4 239/5          |
| 154/21 195/2 249/10               | 31/11 32/3 32/12 32/20           | 239/11 240/1 241/4 241/7          |
| 252/10                            | 33/3 34/19 34/21 34/23           | 241/13 241/20 241/22              |
| <b>took [7]</b> 26/8 143/23       | 34/25 35/3 35/4 35/5             | 242/2 242/25 243/8                |
| 172/21 191/23 193/1               | 38/2 40/13 40/18 41/25           | 247/13 248/25 253/5               |
| 214/25 217/24                     | 42/3 42/13 43/4 43/9             | 253/17 254/7 254/9                |
| <b>top [5]</b> 61/24 86/24        | 43/9 43/12 43/16 43/20           | 254/11 255/11 256/1 259/6         |
| 139/18 139/23 145/4               | 43/23 44/8 44/14 46/5            | 259/7 259/9 259/11                |
| <b>topic [3]</b> 54/4 80/24 82/18 | 46/16 47/6 49/8 49/20            | 259/12                            |
| <b>Toronto [1]</b> 5/15           | 53/20 54/4 54/5 56/9             | <b>trajectory [1]</b> 222/19      |
| <b>tort [2]</b> 251/13 252/4      | 56/9 56/22 57/3 57/3             | <b>transcribed [1]</b> 262/10     |
| <b>total [2]</b> 12/15 207/4      | 58/19 58/24 59/1 60/12           | <b>transcript [15]</b> 1/13 33/22 |
| <b>totality [1]</b> 142/9         | 61/15 61/18 62/2 62/4            | 34/5 39/3 40/2 41/20              |
| <b>totally [2]</b> 214/5 237/4    | 63/2 63/6 63/15 63/18            | 121/17 122/7 123/6 135/24         |
| <b>toward [4]</b> 61/24 71/10     | 64/18 65/10 70/1 71/12           | 209/8 236/8 258/2 262/5           |
| 118/12 221/3                      | 72/12 73/21 73/23 75/17          | 262/12                            |

|                                   |                                   |                                   |
|-----------------------------------|-----------------------------------|-----------------------------------|
| <b>T</b>                          | 142/20 159/17 159/18              | 108/3 126/5 126/8 156/11          |
| <b>transcripts [2]</b> 33/7 157/1 | 159/19 159/21 159/22              | 163/6 166/9 172/18 176/4          |
| <b>transition [4]</b> 53/21 54/6  | 160/1 160/4 160/6 160/8           | 181/11 189/5 224/15 233/8         |
| 58/24 158/22                      | 160/16 160/18 161/8 161/11        | 244/23 245/1 247/4 251/2          |
| <b>transitioned [1]</b> 63/16     | 161/12 162/5 163/3 163/4          | 257/22 257/22 258/13              |
| <b>transitioning [2]</b> 29/24    | 163/10 163/18 163/19              | 259/24 259/25 260/15              |
| 31/6                              | 164/10 164/21 164/22              | 260/22 260/23 260/24              |
| <b>transparent [3]</b> 197/18     | 166/20 166/22 166/23              | <b>turn [31]</b> 15/5 15/25 19/19 |
| 230/1 230/22                      | 167/2 167/3 173/8 173/9           | 20/19 21/10 21/16 21/23           |
| <b>Transport [3]</b> 51/13 54/16  | 173/11 187/3 187/24 188/9         | 21/25 22/15 22/19 23/5            |
| 56/7                              | 192/22 192/23 223/25              | 55/16 62/12 65/5 70/23            |
| <b>Transportation [1]</b> 18/12   | 224/1 224/25 225/14               | 72/13 72/24 113/1 113/24          |
| <b>traumatic [2]</b> 85/10 85/12  | 229/1 229/5 232/9 232/10          | 132/7 132/15 142/14               |
| <b>travel [1]</b> 240/22          | <b>trimming [8]</b> 118/7 131/25  | 142/15 145/10 159/23              |
| <b>treatment [1]</b> 109/11       | 161/9 186/19 186/21 187/1         | 168/25 170/9 176/12 194/9         |
| <b>tree [2]</b> 127/2 176/6       | 187/3 187/8                       | 217/17 236/13                     |
| <b>trial [34]</b> 15/6 19/11 33/6 | <b>trip [1]</b> 156/11            | <b>turn-off [1]</b> 142/14        |
| 33/14 36/8 36/13 37/19            | <b>true [13]</b> 35/15 55/6 61/21 | <b>turning [1]</b> 24/10          |
| 39/24 42/10 44/5 45/15            | 89/2 100/25 141/1 169/13          | <b>turnout [1]</b> 49/6           |
| 91/21 91/22 91/23 110/10          | 170/4 207/2 217/11 227/17         | <b>turns [6]</b> 129/8 142/18     |
| 110/16 110/23 110/25 111/3        | 260/7 262/5                       | 168/15 169/4 169/24               |
| 116/22 117/4 121/17 123/7         | <b>trustworthy [31]</b> 18/20     | 254/3                             |
| 123/11 151/21 153/23              | 19/3 60/4 62/23 148/19            | <b>twenty [2]</b> 72/5 90/2       |
| 156/18 156/24 157/3 206/1         | 148/22 149/2 149/16 150/3         | <b>two [149]</b> 6/21 12/6 18/2   |
| 207/20 208/11 242/14              | 150/5 150/10 150/12               | 18/15 18/16 18/25 26/4            |
| 243/22                            | 150/17 150/18 150/20              | 28/8 29/11 31/3 42/4              |
| <b>trick [2]</b> 58/15 137/12     | 150/22 151/8 153/6 153/12         | 44/25 45/14 45/17 52/23           |
| <b>tricked [1]</b> 40/9           | 153/23 154/6 154/7 154/11         | 53/7 59/10 63/25 64/4             |
| <b>tricks [1]</b> 59/9            | 154/12 154/13 154/14              | 64/7 66/17 66/21 66/23            |
| <b>tried [5]</b> 54/17 71/23      | 154/16 154/21 155/3               | 67/8 67/9 78/17 80/1              |
| 155/5 227/12 258/12               | 155/21 246/15                     | 81/11 81/14 81/16 82/5            |
| <b>trier [1]</b> 235/19           | <b>truth [1]</b> 30/19            | 82/20 88/17 89/16 90/24           |
| <b>tries [3]</b> 53/23 54/10      | <b>truthful [3]</b> 16/6 19/21    | 90/25 91/5 91/7 91/13             |
| 256/8                             | 154/19                            | 93/12 94/4 94/14 95/12            |
| <b>trigger [2]</b> 89/11 222/21   | <b>try [16]</b> 22/6 29/21 48/25  | 96/15 96/20 101/2 103/14          |
| <b>triggered [2]</b> 186/5        | 69/15 71/1 71/12 89/20            | 103/23 104/10 104/18              |
| 226/22                            | 101/10 119/16 121/22              | 105/7 105/8 106/23 112/20         |
| <b>trim [63]</b> 71/25 72/7       | 133/11 173/22 233/19              | 117/25 118/5 118/19 119/10        |
| 74/20 74/20 74/24 75/3            | 234/18 236/14 244/4               | 119/21 122/24 124/22              |
| 89/18 89/24 90/5 112/20           | <b>trying [35]</b> 52/12 57/1     | 124/25 125/4 127/2 127/7          |
| 130/9 141/10 141/20 141/23        | 69/23 71/6 71/10 73/19            | 129/17 130/8 130/10 131/15        |
| 142/5 142/7 142/11 142/17         | 98/21 101/21 101/21 106/20        | 132/10 134/8 134/16               |



|  |   |  |
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| <p><b>T</b><br/> <b>two...</b> [77] 134/23 135/2<br/> 135/20 138/14 143/17<br/> 144/2 145/13 147/1 147/3<br/> 147/22 149/11 155/6 158/6<br/> 173/20 177/13 187/9<br/> 188/25 193/16 198/20<br/> 199/11 199/16 199/22<br/> 201/16 201/22 204/12<br/> 207/23 208/3 208/20<br/> 209/5 209/22 210/13<br/> 210/15 210/19 212/7<br/> 220/16 220/17 220/21<br/> 221/5 224/18 226/9<br/> 227/11 228/23 230/11<br/> 231/5 231/17 231/18<br/> 231/23 236/14 237/19<br/> 238/3 238/16 240/7 240/8<br/> 240/11 240/20 241/8<br/> 241/25 242/4 242/5<br/> 243/17 244/14 244/18<br/> 245/3 245/6 246/13<br/> 247/10 247/25 248/13<br/> 248/19 249/21 250/2<br/> 251/18 253/15 256/15<br/> 258/21 259/8 261/2<br/> <b>two's</b> [3] 216/11 225/25<br/> 226/3<br/> <b>two-minute</b> [1] 131/15<br/> <b>two-year</b> [2] 64/4 64/7<br/> <b>twofold</b> [1] 20/5<br/> <b>type</b> [22] 11/9 11/11 11/14<br/> 11/17 11/18 12/3 13/20<br/> 14/3 14/7 14/13 30/16<br/> 49/4 54/4 54/6 107/16<br/> 157/19 157/20 162/14<br/> 167/1 211/7 221/14 252/15<br/> <b>type-rated</b> [4] 11/9 11/14<br/> 54/6 157/19<br/> <b>types</b> [6] 11/23 49/18<br/> 53/20 54/11 116/4 228/12<br/> <b>typical</b> [1] 50/24</p> | <p><b>typically</b> [11] 49/3 49/5<br/> 51/23 57/22 57/23 66/16<br/> 125/24 136/11 139/15 140/1<br/> 159/8<br/> <b>typo</b> [2] 137/15 137/18</p> <hr/> <p><b>U</b></p> <p><b>U.S</b> [4] 48/10 204/9<br/> 228/15 245/14<br/> <b>U.S.</b> [6] 11/1 48/6 99/7<br/> 128/8 128/9 182/14<br/> <b>U.S.-based</b> [6] 11/1 48/6<br/> 99/7 128/8 128/9 182/14<br/> <b>ugly</b> [1] 217/20<br/> <b>Uh</b> [1] 115/23<br/> <b>Uh-huh</b> [1] 115/23<br/> <b>ultimate</b> [9] 76/10 87/2<br/> 87/14 87/18 88/13 88/25<br/> 122/18 176/13 204/17<br/> <b>ultimately</b> [18] 31/5 31/10<br/> 43/19 43/22 72/6 83/6<br/> 85/9 88/16 142/11 202/5<br/> 202/14 207/11 211/1<br/> 212/24 216/4 216/12<br/> 225/18 251/21<br/> <b>un</b> [1] 199/16<br/> <b>unclear</b> [2] 124/20 162/24<br/> <b>uncommanded</b> [6] 30/25<br/> 74/16 164/10 173/9 173/10<br/> 232/9<br/> <b>uncover</b> [1] 208/1<br/> <b>under</b> [23] 6/19 6/19 10/1<br/> 32/17 34/20 42/21 96/15<br/> 111/4 111/5 131/16 159/25<br/> 202/23 204/4 207/10<br/> 211/7 216/21 237/14<br/> 244/23 245/23 253/9<br/> 253/25 261/7 261/8<br/> <b>undercut</b> [2] 121/22 244/5<br/> <b>undergo</b> [2] 20/12 221/14<br/> <b>undergone</b> [4] 16/16 20/10<br/> 43/12 65/10<br/> <b>undergrad</b> [1] 8/14</p> | <p><b>Underline</b> [1] 120/10<br/> <b>underlying</b> [3] 198/18<br/> 219/17 220/6<br/> <b>undermine</b> [2] 120/3 120/9<br/> <b>undermines</b> [1] 37/12<br/> <b>understand</b> [67] 6/18 7/11<br/> 12/24 17/4 21/3 22/17<br/> 27/15 52/12 53/14 56/12<br/> 57/5 64/14 65/7 65/16<br/> 67/21 67/22 69/6 72/9<br/> 72/24 73/24 74/6 77/8<br/> 80/17 82/8 89/4 96/3<br/> 97/3 101/11 105/20 106/24<br/> 119/24 120/19 126/13<br/> 129/6 130/15 132/7 135/11<br/> 139/4 146/20 148/8 151/4<br/> 151/15 152/5 166/6 166/10<br/> 167/7 172/18 173/22<br/> 176/17 176/22 186/23<br/> 187/15 190/15 193/8 204/2<br/> 204/6 211/15 211/15 211/20<br/> 213/5 214/3 214/4 218/23<br/> 219/3 227/22 232/18<br/> 247/21<br/> <b>understanding</b> [69] 16/2<br/> 17/7 21/5 21/7 22/22 25/7<br/> 25/14 25/18 25/21 27/11<br/> 27/14 28/1 28/6 28/7<br/> 30/11 31/8 32/25 33/16<br/> 38/4 42/2 48/17 51/16<br/> 54/1 55/14 57/7 59/16<br/> 59/19 59/22 61/17 61/21<br/> 62/13 63/17 72/12 76/24<br/> 82/4 82/5 82/9 84/12<br/> 89/3 91/3 91/5 97/22<br/> 108/24 128/13 129/2<br/> 135/14 137/5 140/10 141/9<br/> 143/7 151/13 162/14 163/9<br/> 164/5 167/19 169/19<br/> 170/15 171/19 172/24<br/> 173/5 174/3 177/4 180/11<br/> 184/18 188/12 190/18</p> |
|--|---|--|

|  |   |  |
|--|---|--|
| <p><b>U</b><br/> <b>understanding...</b> [3]<br/> 192/20 192/25 193/12<br/> <b>understands</b> [1] 55/6<br/> <b>understood</b> [16] 10/21<br/> 53/3 87/23 95/24 98/24<br/> 103/14 108/4 113/20<br/> 128/24 129/3 129/7 148/3<br/> 162/10 186/9 186/11<br/> 225/16<br/> <b>undertaken</b> [1] 121/3<br/> <b>undertakes</b> [1] 175/14<br/> <b>undertook</b> [1] 260/14<br/> <b>undesired</b> [1] 103/5<br/> <b>undo</b> [1] 129/22<br/> <b>uneventful</b> [1] 78/7<br/> <b>unfair</b> [1] 109/21<br/> <b>unforeseen</b> [1] 240/4<br/> <b>unfortunately</b> [5] 189/4<br/> 201/20 240/6 242/4<br/> 257/23<br/> <b>unintended</b> [8] 159/16<br/> 161/6 161/22 168/1 237/20<br/> 238/14 239/15 241/23<br/> <b>Union</b> [1] 58/3<br/> <b>UNITED</b> [36] 1/1 1/6 1/14<br/> 1/19 6/7 15/16 19/14 33/14<br/> 34/11 35/22 36/17 38/11<br/> 39/23 39/24 40/4 40/20<br/> 41/3 45/15 46/23 48/6<br/> 110/10 127/14 135/24<br/> 204/9 205/4 205/14<br/> 211/10 227/9 227/10<br/> 227/12 246/18 246/23<br/> 255/19 256/6 258/14<br/> 262/14<br/> <b>universe</b> [2] 50/2 206/5<br/> <b>UNIVERSITY</b> [3] 2/4 2/5<br/> 252/5<br/> <b>unknowingly</b> [2] 112/22<br/> 129/20<br/> <b>unknown</b> [1] 238/8</p> | <p><b>unless</b> [7] 13/2 55/25<br/> 90/18 111/12 111/16 130/23<br/> 183/3<br/> <b>unlikely</b> [1] 82/1<br/> <b>unlimited</b> [3] 106/17 131/7<br/> 221/2<br/> <b>unnecessary</b> [2] 56/13<br/> 199/3<br/> <b>unpack</b> [1] 48/16<br/> <b>unrebutted</b> [1] 199/17<br/> <b>unreliable</b> [1] 219/4<br/> <b>unscrew</b> [2] 61/8 61/14<br/> <b>until</b> [5] 125/10 146/18<br/> 157/12 221/2 225/3<br/> <b>untrim</b> [1] 160/4<br/> <b>untrue</b> [2] 133/21 247/23<br/> <b>untrustworthy</b> [5] 150/3<br/> 150/19 151/8 153/12<br/> 153/23<br/> <b>unusual</b> [2] 25/2 193/7<br/> <b>up</b> [82] 5/7 13/1 13/21<br/> 16/21 21/10 21/16 21/23<br/> 21/25 22/8 22/15 24/15<br/> 24/18 24/25 26/24 33/24<br/> 40/23 40/24 42/9 44/2<br/> 46/10 46/17 47/11 49/16<br/> 60/18 61/23 61/24 69/10<br/> 70/20 72/10 78/23 88/16<br/> 89/24 90/3 90/7 94/25<br/> 102/21 104/9 109/7 109/25<br/> 114/20 115/5 115/7 118/11<br/> 125/13 129/8 132/7 132/15<br/> 139/10 139/16 144/8 148/7<br/> 155/4 156/11 157/8 168/8<br/> 169/5 175/20 179/25<br/> 192/21 195/2 195/5 197/23<br/> 200/2 200/18 200/23<br/> 201/19 201/21 202/18<br/> 203/6 203/16 206/25<br/> 217/19 222/19 225/23<br/> 230/24 231/13 232/8<br/> 236/10 247/5 254/9</p> | <p>260/17 260/24<br/> <b>update</b> [5] 112/20 130/9<br/> 186/12 190/9 255/11<br/> <b>updated</b> [2] 132/11 190/16<br/> <b>upgrade</b> [1] 158/8<br/> <b>upon</b> [31] 14/14 28/7<br/> 34/20 42/15 47/9 48/13<br/> 87/14 101/2 107/8 116/5<br/> 121/6 121/10 126/22 132/4<br/> 147/13 149/4 151/1 172/18<br/> 205/25 217/9 218/10<br/> 218/13 222/21 223/5<br/> 226/22 228/22 235/20<br/> 244/6 244/20 246/3<br/> 252/14<br/> <b>upper</b> [7] 22/24 70/22<br/> 83/7 114/19 128/24 174/5<br/> 188/2<br/> <b>upset</b> [1] 78/6<br/> <b>upside</b> [1] 218/16<br/> <b>us</b> [30] 9/24 10/15 13/11<br/> 13/16 21/3 21/15 25/12<br/> 29/10 36/21 49/14 67/22<br/> 71/17 72/20 72/21 72/24<br/> 73/24 76/5 76/16 109/9<br/> 109/19 112/24 113/8 114/9<br/> 122/22 167/2 170/3<br/> 186/22 192/14 196/1 259/8<br/> <b>use</b> [15] 11/20 34/2 42/4<br/> 74/20 110/20 159/17<br/> 159/18 161/5 162/23<br/> 208/22 218/13 218/19<br/> 225/14 239/15 240/5<br/> <b>used</b> [14] 12/4 68/21 111/3<br/> 116/17 154/12 155/7 167/21<br/> 184/1 184/3 193/11 201/24<br/> 208/20 244/20 246/22<br/> <b>useful</b> [1] 65/16<br/> <b>uses</b> [2] 93/2 93/9<br/> <b>using</b> [8] 93/22 110/19<br/> 121/4 159/21 166/19<br/> 205/19 215/14 216/23</p> |
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|  |   |   |
|--|---|---|
| <p><b>U</b><br/> <b>usually</b> [1] 111/12<br/> <b>UTAH</b> [3] 2/4 2/4 2/5<br/> <b>utilize</b> [3] 161/20 162/12<br/> 163/2<br/> <b>utilized</b> [1] 163/10</p>   | <p>35/23 44/5 49/5 50/8<br/> 64/10 65/14 71/14 82/14<br/> 83/6 83/10 84/21 88/20<br/> 98/15 98/18 102/8 102/25<br/> 116/14 120/3 121/22 123/19<br/> 127/24 128/24 131/24<br/> 132/6 134/21 142/19 144/4<br/> 145/9 148/4 187/13 191/20<br/> 196/10 196/21 197/24<br/> 198/24 202/6 202/17<br/> 203/3 204/13 213/20<br/> 213/20 219/12 223/6<br/> 231/20 233/5 233/12<br/> 235/18 241/16 241/21<br/> 244/5 244/11 244/13<br/> 247/17 248/4 250/22<br/> 251/19 251/25 252/15<br/> 252/16 253/18 255/4<br/> 255/8 255/18 256/20<br/> 258/20</p>  | <p><b>virtually</b> [4] 64/23 83/9<br/> 85/1 98/20<br/> <b>virtue</b> [2] 159/25 160/3<br/> <b>viscerally</b> [1] 84/15<br/> <b>visibility</b> [1] 52/13<br/> <b>vision</b> [1] 73/15<br/> <b>visual</b> [4] 70/15 72/16<br/> 72/19 73/1<br/> <b>voice</b> [1] 66/17<br/> <b>volume</b> [7] 1/13 3/3 4/3<br/> 4/15 112/20 130/10 156/5<br/> <b>voluminous</b> [1] 220/15<br/> <b>volunteered</b> [1] 241/13<br/> <b>vulnerability</b> [2] 88/14<br/> 101/1<br/> <b>vulnerable</b> [2] 98/19<br/> 103/21</p>   |
| <p><b>V</b><br/> <b>V1</b> [10] 4/4 4/5 4/6 4/7<br/> 4/8 4/9 4/10 4/11 4/12<br/> 4/13<br/> <b>vacuum</b> [3] 107/3 107/16<br/> 107/19<br/> <b>vague</b> [1] 208/13<br/> <b>valid</b> [1] 216/18<br/> <b>validated</b> [2] 189/9 189/14<br/> <b>valuable</b> [1] 163/23<br/> <b>vane</b> [13] 98/9 98/25<br/> 103/15 106/12 130/13 131/7<br/> 134/10 189/10 189/14<br/> 189/17 220/25 223/8<br/> 228/9<br/> <b>variation</b> [1] 87/21<br/> <b>variety</b> [1] 251/15<br/> <b>various</b> [11] 11/23 14/1<br/> 14/14 15/11 32/1 43/13<br/> 77/25 125/1 156/25 157/14<br/> 237/21<br/> <b>varying</b> [1] 85/13<br/> <b>vast</b> [1] 197/12<br/> <b>vehicle</b> [1] 26/20<br/> <b>verbiage</b> [1] 187/5<br/> <b>verify</b> [1] 189/12<br/> <b>version</b> [5] 20/11 23/3<br/> 28/3 88/2 158/18<br/> <b>versions</b> [4] 100/25 157/14<br/> 157/25 173/5<br/> <b>versus</b> [1] 24/5<br/> <b>vertical</b> [2] 113/22 221/2<br/> <b>very</b> [76] 7/19 13/18 22/18<br/> 25/2 25/2 25/2 25/4<br/> 28/13 32/23 33/1 35/14</p> | <p>196/10 196/21 197/24<br/> 198/24 202/6 202/17<br/> 203/3 204/13 213/20<br/> 213/20 219/12 223/6<br/> 231/20 233/5 233/12<br/> 235/18 241/16 241/21<br/> 244/5 244/11 244/13<br/> 247/17 248/4 250/22<br/> 251/19 251/25 252/15<br/> 252/16 253/18 255/4<br/> 255/8 255/18 256/20<br/> 258/20<br/> <b>via</b> [2] 112/1 262/9<br/> <b>vicinity</b> [1] 126/1<br/> <b>VICKIE</b> [3] 3/4 5/8 7/10<br/> <b>victim</b> [8] 197/19 206/15<br/> 234/21 234/22 242/23<br/> 242/24 252/14 252/15<br/> <b>victims</b> [11] 197/2 197/23<br/> 197/24 202/22 204/4<br/> 211/8 232/15 248/17 257/1<br/> 257/17 261/5<br/> <b>victims'</b> [6] 5/12 197/25<br/> 201/22 202/23 203/10<br/> 244/24<br/> <b>videoconferencing</b> [1]<br/> 262/10<br/> <b>view</b> [7] 37/12 114/16<br/> 147/16 165/23 175/16<br/> 179/8 193/15<br/> <b>Vince</b> [1] 113/2<br/> <b>violated</b> [2] 203/11 203/14<br/> <b>Virginia</b> [1] 2/18<br/> <b>virtual</b> [1] 68/14</p> | <p><b>W</b><br/> <b>wait</b> [2] 187/17 257/3<br/> <b>walk</b> [3] 227/12 231/16<br/> 250/1<br/> <b>want</b> [54] 8/9 13/24 17/10<br/> 28/13 28/17 31/1 31/3<br/> 37/8 37/10 41/22 41/24<br/> 43/5 44/21 46/19 53/10<br/> 53/17 53/19 54/14 55/16<br/> 56/6 57/19 59/9 60/15<br/> 60/25 62/12 63/23 63/23<br/> 64/6 65/5 67/7 67/8 67/11<br/> 75/8 75/11 79/20 81/3<br/> 82/18 82/23 82/25 161/7<br/> 172/9 185/8 191/21 191/25<br/> 194/9 195/2 196/22 197/9<br/> 207/1 210/9 210/10 213/4<br/> 218/2 258/22<br/> <b>wanted</b> [11] 15/21 17/12<br/> 18/1 18/15 147/1 173/13<br/> 174/19 176/19 192/1<br/> 240/15 248/24<br/> <b>warnings</b> [5] 68/7 68/7<br/> 70/15 73/1 77/16<br/> <b>warns</b> [1] 68/11</p> |

|   |   |   |
|---|---|---|
| <p><b>W</b><br/> <b>was [552]</b><br/> <b>Washington [2]</b> 1/21 2/21<br/> <b>wasn't [25]</b> 68/4 74/14<br/> 102/11 102/24 105/9 108/8<br/> 112/24 120/6 121/8 124/16<br/> 147/6 151/10 164/3 169/19<br/> 170/6 192/24 200/16<br/> 209/7 212/11 213/18 227/5<br/> 230/7 230/7 235/15<br/> 258/13<br/> <b>watched [1]</b> 78/10<br/> <b>way [54]</b> 13/21 21/4 23/4<br/> 25/15 30/13 34/8 34/9<br/> 40/10 51/6 54/18 66/21<br/> 76/7 84/16 88/1 89/18<br/> 92/1 93/7 95/4 95/8<br/> 95/25 100/20 101/6 101/19<br/> 102/21 106/18 111/10<br/> 113/21 124/1 124/10 131/6<br/> 155/4 158/11 161/2 161/25<br/> 177/3 200/15 215/19<br/> 219/16 225/12 228/10<br/> 228/21 231/9 231/14<br/> 232/7 232/24 237/24<br/> 240/14 245/8 246/11<br/> 248/3 249/13 254/22<br/> 256/25 259/1<br/> <b>ways [3]</b> 57/24 201/10<br/> 202/3<br/> <b>we [378]</b><br/> <b>we're [39]</b> 13/22 16/4<br/> 28/15 31/9 34/4 47/17<br/> 58/2 63/10 75/20 81/6<br/> 89/25 91/4 103/3 104/14<br/> 110/18 110/20 112/9 119/15<br/> 123/20 123/21 123/21<br/> 132/2 137/20 139/14<br/> 139/14 167/9 170/2 173/19<br/> 187/21 191/5 191/6 197/11<br/> 205/18 215/17 236/7<br/> 236/9 252/19 258/8</p> | <p>259/18<br/> <b>we've [55]</b> 16/22 21/18<br/> 21/23 41/21 52/15 59/8<br/> 60/3 61/11 72/13 82/17<br/> 84/3 84/11 88/2 91/24<br/> 95/3 98/6 103/25 109/5<br/> 147/22 155/21 157/7<br/> 168/24 187/9 190/14<br/> 190/23 191/15 192/9<br/> 193/21 195/12 198/6<br/> 201/25 236/8 251/4<br/> 251/23 254/14<br/> <b>wearing [1]</b> 262/9<br/> <b>weather [1]</b> 13/3<br/> <b>week [2]</b> 167/20 167/23<br/> <b>weekly [2]</b> 10/13 10/17<br/> <b>weeks [8]</b> 35/22 42/16<br/> 65/2 198/17 199/12 201/15<br/> 231/25 244/13<br/> <b>weigh [1]</b> 250/13<br/> <b>weight [1]</b> 214/5<br/> <b>Weiland [3]</b> 145/16 145/22<br/> 147/5<br/> <b>welcome [1]</b> 147/9<br/> <b>well [101]</b> 6/12 9/20 11/9<br/> 14/6 14/17 15/25 19/3<br/> 20/19 24/4 24/21 26/4<br/> 27/3 28/24 32/15 37/12<br/> 38/4 39/2 39/4 42/6 42/8<br/> 47/12 48/4 54/25 58/17<br/> 59/22 61/16 61/21 68/13<br/> 68/20 71/19 72/13 77/13<br/> 79/22 81/24 83/15 83/18<br/> 90/19 92/10 93/18 95/15<br/> 104/13 115/1 118/13 122/1<br/> 125/12 128/12 129/20<br/> 132/17 133/9 133/23<br/> 139/14 139/17 140/22<br/> 142/4 146/12 147/18<br/> 147/19 160/16 164/19<br/> 166/15 168/3 168/22<br/> 170/16 175/16 176/2 179/2</p> | <p>181/19 182/2 182/16<br/> 182/24 187/25 192/17<br/> 194/3 195/1 195/10 195/21<br/> 197/7 197/24 199/15<br/> 202/3 207/19 213/25<br/> 219/7 222/23 227/23<br/> 229/16 232/23 236/8<br/> 236/11 238/17 239/20<br/> 241/19 244/8 246/10<br/> 249/24 253/5 254/15<br/> 257/3 258/17 259/5<br/> 259/18<br/> <b>well-known [1]</b> 232/23<br/> <b>went [12]</b> 40/10 61/17<br/> 145/19 157/13 158/5 158/7<br/> 174/7 201/4 253/16<br/> 254/16 255/13 260/4<br/> <b>were [181]</b> 6/25 10/2<br/> 10/12 10/17 12/17 12/18<br/> 15/10 17/2 17/14 23/25<br/> 28/5 28/9 29/11 29/25<br/> 30/22 31/3 36/5 36/7<br/> 37/24 42/13 45/7 49/3<br/> 49/5 49/10 49/11 49/21<br/> 50/4 50/10 68/5 68/7<br/> 68/25 69/22 70/18 72/6<br/> 72/14 73/21 75/5 77/14<br/> 77/21 79/19 81/23 83/13<br/> 83/19 83/25 84/2 84/6<br/> 84/24 91/8 91/18 104/8<br/> 108/13 108/17 108/23<br/> 110/25 111/2 111/3 111/20<br/> 117/5 117/9 117/9 117/11<br/> 118/11 119/10 123/12<br/> 124/22 126/23 130/4 131/5<br/> 132/25 133/10 133/11<br/> 134/25 135/1 138/18<br/> 138/22 143/17 144/2<br/> 144/24 145/13 146/9<br/> 146/21 147/2 147/11 147/13<br/> 148/18 149/15 149/16<br/> 150/17 150/25 152/5</p> |
|---|---|---|



|                                  |                                  |                                  |
|----------------------------------|----------------------------------|----------------------------------|
| <b>W</b>                         | 214/20 214/23 215/6              | 176/16 176/22 186/10             |
| <b>were...</b> [91] 153/25 154/1 | 229/4 229/18 257/15              | 202/8 203/5 205/16 206/4         |
| 154/15 155/7 155/12 157/9        | <b>whatsoever</b> [1] 60/12      | 206/10 208/6 230/20              |
| 168/7 169/15 170/1 170/24        | <b>wheel</b> [7] 75/3 89/9 89/12 | 240/7 247/17 249/20              |
| 172/14 172/17 174/8              | 187/2 187/3 187/24 188/9         | 250/14 251/24 252/4              |
| 177/13 177/14 179/15 181/4       | <b>when</b> [101] 9/17 12/5      | 252/24 255/8 257/5               |
| 181/7 181/7 181/10 181/25        | 24/10 24/18 25/5 35/14           | <b>whereas</b> [1] 192/15        |
| 182/13 182/19 185/14             | 37/3 40/16 40/18 42/6            | <b>whether</b> [47] 34/9 37/1    |
| 186/17 189/3 189/4 189/6         | 57/5 57/6 63/16 66/19            | 43/2 43/6 50/21 85/9             |
| 189/11 189/18 189/20             | 68/12 69/11 70/9 70/12           | 92/13 108/13 116/10              |
| 189/21 189/23 190/17             | 70/18 71/22 72/9 77/6            | 122/20 122/24 130/7              |
| 192/12 194/9 194/10              | 87/18 89/9 89/21 90/14           | 136/22 145/1 146/7 148/18        |
| 196/23 198/24 200/18             | 91/4 96/11 98/2 98/13            | 149/1 149/4 150/16 150/21        |
| 201/19 201/21 208/6              | 102/2 102/8 102/25               | 151/7 153/5 153/10 153/22        |
| 208/21 209/10 209/19             | 104/22 107/17 108/8 113/3        | 154/5 154/25 155/3               |
| 210/21 212/7 212/19              | 114/14 114/14 114/23             | 165/23 167/16 170/25             |
| 213/16 215/1 215/2 215/7         | 116/17 120/12 124/17             | 173/24 175/20 175/25             |
| 217/23 217/25 220/13             | 125/22 126/24 128/17             | 177/7 185/5 194/11 197/1         |
| 221/17 221/23 222/3              | 133/13 134/4 139/5 140/2         | 197/2 197/5 198/3 211/6          |
| 222/12 223/11 225/2              | 158/11 158/12 158/14 159/1       | 211/7 228/16 228/20              |
| 230/11 232/25 233/7              | 159/22 160/12 163/1              | 246/19 252/21 257/18             |
| 234/12 237/18 241/10             | 166/22 170/5 170/11 171/7        | <b>which</b> [110] 8/9 12/2 12/3 |
| 242/4 242/12 244/4               | 172/16 173/9 173/17 174/6        | 13/15 14/12 17/22 18/11          |
| 244/16 244/19 245/10             | 176/3 185/10 187/5 188/5         | 22/18 24/14 32/20 36/5           |
| 246/8 246/21 246/21              | 198/23 202/4 202/13              | 37/4 39/1 40/12 45/11            |
| 248/25 250/2 256/11              | 202/16 203/4 203/19              | 46/20 47/5 51/1 54/4             |
| 257/17 257/21 259/4              | 205/9 206/24 213/4 218/9         | 59/24 66/9 67/12 68/11           |
| 259/23 259/24 260/8              | 218/15 224/3 225/1 225/4         | 70/13 73/3 80/17 83/10           |
| 260/15 260/23 260/23             | 229/5 229/9 229/15               | 83/21 88/18 89/5 89/12           |
| 260/24 262/10                    | 231/12 234/21 236/17             | 90/2 90/5 96/15 97/14            |
| <b>weren't</b> [5] 89/6 97/1     | 237/18 239/9 243/6 247/3         | 97/19 104/12 105/22              |
| 167/8 167/16 176/17              | 250/19 252/11 253/21             | 106/21 108/18 119/19 120/6       |
| <b>what</b> [407]                | 254/6 254/15 255/25              | 122/22 124/11 125/9 127/1        |
| <b>what Captain</b> [1] 250/17   | 256/1 256/5                      | 128/15 132/5 132/23              |
| <b>what's</b> [16] 39/9 39/19    | <b>Whenever</b> [1] 252/13       | 141/15 145/14 147/15 149/4       |
| 69/4 70/19 70/19 128/5           | <b>where</b> [42] 15/11 35/22    | 149/6 159/23 165/18              |
| 152/25 165/3 169/20              | 39/11 48/23 71/2 86/8            | 168/16 169/7 169/22 171/9        |
| 199/16 203/14 219/15             | 87/11 88/16 102/4 105/25         | 176/5 180/13 181/12 190/2        |
| 226/12 231/14 233/22             | 106/24 107/6 107/23              | 193/12 197/21 201/24             |
| 257/24                           | 113/24 122/23 123/8              | 205/5 205/22 207/5               |
| <b>whatever</b> [11] 49/15       | 123/13 127/5 130/8 130/11        | 209/20 210/15 214/1              |
| 154/13 160/1 165/24 197/6        | 135/13 146/22 174/19             | 215/16 215/17 215/23             |

|   |   |  |
|---|---|--|
| <p><b>W</b><br/> <b>which...</b> [34] 216/9 217/22<br/> 218/13 219/1 222/11<br/> 222/20 222/21 224/1<br/> 224/24 227/3 230/17<br/> 230/18 230/19 231/12<br/> 236/21 237/20 238/15<br/> 239/1 239/5 239/10<br/> 239/21 240/1 240/25<br/> 241/10 241/13 241/23<br/> 249/9 250/9 251/6 252/15<br/> 254/24 258/11 260/13<br/> 261/4<br/> <b>while</b> [13] 22/19 68/15<br/> 69/8 71/6 71/9 73/19<br/> 109/18 110/20 181/7 181/7<br/> 181/10 191/2 259/1<br/> <b>who</b> [52] 5/16 5/18 5/19<br/> 5/22 6/1 32/17 33/19<br/> 35/24 40/3 48/7 53/23<br/> 54/10 54/17 55/24 55/25<br/> 56/20 58/9 77/14 84/22<br/> 90/24 91/8 108/8 115/20<br/> 119/21 135/11 149/24<br/> 152/18 170/8 172/15<br/> 179/18 198/18 200/10<br/> 202/21 208/10 215/20<br/> 216/15 219/24 223/10<br/> 223/11 234/21 234/23<br/> 242/23 246/18 248/23<br/> 249/3 249/6 252/4 255/3<br/> 256/16 258/3 259/6<br/> 259/10<br/> <b>who's</b> [5] 14/22 54/6 86/9<br/> 144/11 199/21<br/> <b>whole</b> [6] 93/7 105/11<br/> 150/14 163/12 186/24<br/> 247/17<br/> <b>wholly</b> [1] 87/13<br/> <b>whom</b> [1] 259/8<br/> <b>whose</b> [1] 202/11<br/> <b>why</b> [44] 26/2 40/7 41/24</p> | <p>69/16 70/1 71/11 72/23<br/> 89/11 95/2 113/4 113/25<br/> 119/24 127/21 129/2 132/7<br/> 132/18 144/8 173/13 181/9<br/> 187/14 187/15 188/3<br/> 192/14 196/17 210/24<br/> 211/11 212/19 212/19<br/> 214/25 215/3 217/23<br/> 217/23 229/7 229/8<br/> 229/21 234/9 235/7<br/> 238/24 239/21 242/13<br/> 244/22 245/10 256/10<br/> 259/13<br/> <b>WICK</b> [1] 2/23<br/> <b>widely</b> [1] 224/10<br/> <b>wider</b> [1] 193/15<br/> <b>wife</b> [1] 5/16<br/> <b>will</b> [104] 7/4 7/15 7/17<br/> 7/19 8/5 8/21 22/10 26/15<br/> 28/17 29/5 31/14 32/8<br/> 33/7 35/21 36/21 37/16<br/> 37/21 39/2 39/3 39/22<br/> 40/4 41/2 41/7 41/9 41/11<br/> 45/8 47/15 52/12 53/20<br/> 53/21 53/22 54/5 54/9<br/> 56/1 58/6 58/8 58/14 59/4<br/> 67/20 68/21 70/17 72/2<br/> 73/12 74/23 79/22 81/20<br/> 81/22 88/17 88/24 89/15<br/> 89/17 90/19 94/9 97/18<br/> 98/11 105/22 105/22<br/> 105/23 109/25 111/14 112/1<br/> 123/10 123/17 124/6<br/> 125/24 126/21 129/14<br/> 130/8 132/18 133/1 142/21<br/> 144/7 145/10 149/20<br/> 154/22 155/19 156/24<br/> 159/8 165/5 172/6 178/23<br/> 190/25 196/19 198/23<br/> 203/16 203/18 208/11<br/> 213/3 213/17 214/4 216/24<br/> 229/17 231/16 232/10</p> | <p>233/14 233/22 236/5<br/> 240/20 243/14 251/6<br/> 251/8 260/9 261/7 261/8<br/> <b>WILLIAMS</b> [3] 262/4<br/> 262/17 262/17<br/> <b>wind</b> [9] 21/10 21/16 21/23<br/> 21/25 22/15 24/16 129/8<br/> 132/7 132/15<br/> <b>wind-up</b> [8] 21/10 21/16<br/> 21/23 21/25 22/15 129/8<br/> 132/7 132/15<br/> <b>window</b> [1] 102/20<br/> <b>wing</b> [2] 13/21 24/16<br/> <b>withdraw</b> [1] 191/25<br/> <b>withheld</b> [16] 40/8 91/8<br/> 91/13 92/14 92/19 95/13<br/> 96/21 99/12 106/8 133/25<br/> 134/13 134/23 207/23<br/> 221/8 224/18 231/24<br/> <b>withhold</b> [1] 135/15<br/> <b>withholding</b> [4] 28/2 135/3<br/> 223/20 238/4<br/> <b>within</b> [18] 133/16 143/5<br/> 154/18 167/20 167/23<br/> 177/8 177/13 184/17<br/> 194/14 195/22 197/5 213/9<br/> 214/7 214/7 220/2 230/7<br/> 230/7 260/2<br/> <b>without</b> [13] 14/2 20/14<br/> 33/24 109/23 118/8 118/10<br/> 143/13 223/23 225/6<br/> 239/25 249/4 253/2<br/> 256/5<br/> <b>witness</b> [34] 3/3 5/5 6/8<br/> 6/9 6/15 6/15 6/16 6/24<br/> 31/14 33/2 35/24 36/18<br/> 39/13 52/22 75/8 78/19<br/> 80/3 81/8 81/24 94/10<br/> 109/7 122/6 131/15 131/21<br/> 149/25 152/7 168/19<br/> 188/14 199/20 219/12<br/> 226/21 226/24 242/15</p> |
|---|---|--|

**W**  
**witness...** [1] 249/5  
**witnessed** [1] 14/17  
**witnesses** [17] 6/20 7/3  
 196/6 196/8 196/13 196/16  
 199/16 199/22 201/16  
 224/16 228/5 239/22  
 248/19 249/12 250/11  
 250/20 251/18  
**witnessing** [1] 10/9  
**won't** [2] 161/12 199/3  
**wonder** [1] 74/16  
**wondering** [8] 8/10 122/14  
 123/25 124/4 132/1  
 228/24 229/2 257/9  
**Woods** [4] 145/15 145/15  
 145/19 145/22  
**word** [9] 3/16 10/3 68/21  
 68/22 93/2 93/9 170/23  
 199/17 256/15  
**wording** [1] 208/19  
**words** [15] 89/1 105/15  
 121/4 125/6 141/22 142/14  
 155/7 166/9 184/20 219/10  
 221/23 223/19 233/8  
 240/10 258/4  
**work** [8] 9/18 14/10 47/11  
 151/15 160/14 182/15  
 195/15 256/25  
**worked** [17] 8/22 9/16  
 10/7 48/19 86/4 86/9  
 102/25 114/25 115/25  
 116/5 174/22 175/7 181/22  
 184/18 184/23 195/13  
 236/9  
**working** [8] 47/10 52/16  
 107/13 107/13 137/19  
 173/21 195/19 195/22  
**works** [3] 151/13 184/22  
 250/4  
**world** [46] 14/21 28/15  
 28/21 28/25 29/9 29/13

29/23 29/25 36/14 48/8  
 50/4 50/4 50/7 51/21  
 52/11 58/15 72/11 75/18  
 75/19 75/20 76/1 76/4  
 116/12 194/16 200/4 200/9  
 224/11 225/5 225/21  
 228/16 238/19 239/23  
 241/16 242/7 249/3 249/8  
 249/9 251/14 251/17  
 251/22 254/25 258/22  
 258/24 258/25 261/3  
 261/4  
**world's** [1] 47/14  
**worldwide** [3] 52/6 225/3  
 241/9  
**worry** [1] 170/11  
**worth** [9] 1/3 1/7 2/24  
 122/23 193/19 220/7  
 255/20 262/19 262/20  
**would** [410]  
**wouldn't** [21] 63/15 88/19  
 89/8 103/3 111/9 114/15  
 115/2 136/13 136/16 143/11  
 150/9 160/17 166/19  
 166/19 229/17 229/19  
 238/15 241/19 245/8  
 249/16 249/16  
**wrapping** [1] 203/6  
**writing** [1] 169/1  
**written** [9] 7/11 58/7  
 118/3 124/10 169/20 191/1  
 192/8 215/23 249/24  
**wrong** [7] 92/6 110/16  
 143/10 148/9 213/21  
 260/20 260/22  
**wrote** [12] 44/16 57/6  
 61/6 103/20 113/11 117/19  
 117/20 118/6 118/24  
 137/25 138/1 252/5

**X**

**XVIII** [2] 137/2 137/16

**Y**  
**yaw** [1] 22/12  
**yeah** [36] 9/5 29/20 33/7  
 34/4 49/9 68/1 69/8 81/15  
 81/23 82/1 89/2 94/13  
 99/25 100/13 100/16  
 101/21 115/6 118/15 126/4  
 126/6 145/18 156/7 156/8  
 157/23 157/24 161/7  
 161/23 162/16 167/21  
 174/20 182/8 183/19 188/8  
 197/1 213/3 245/16  
**year** [7] 64/4 64/7 157/11  
 171/5 198/14 238/16 241/9  
**years** [19] 8/23 31/1 31/10  
 63/13 63/25 114/14 148/2  
 158/1 158/6 158/7 158/15  
 195/19 198/18 215/20  
 227/11 228/22 240/8  
 249/5 259/9  
**Yep** [1] 137/24  
**yes** [139] 5/14 8/5 9/10  
 9/13 11/25 12/13 15/20  
 15/24 17/1 17/9 17/25  
 18/10 21/2 21/17 23/23  
 25/7 25/11 25/25 26/14  
 27/10 27/18 28/10 31/8  
 31/12 32/5 33/4 33/16  
 37/9 38/16 38/23 41/11  
 41/17 43/11 43/14 43/24  
 44/9 44/10 45/25 47/3  
 47/19 47/24 48/23 49/23  
 51/25 52/20 53/12 53/16  
 53/25 55/1 57/7 57/18  
 59/18 60/6 60/14 62/17  
 62/21 63/4 63/9 64/15  
 64/16 65/14 66/10 66/25  
 67/16 67/19 76/11 79/24  
 80/10 80/13 80/23 84/2  
 84/10 85/2 86/11 87/17  
 88/22 91/22 95/10 99/5  
 100/9 100/13 100/16

**y**  
**yes...** [57] 100/18 102/2  
 102/13 102/17 103/19  
 103/24 112/12 112/18  
 117/18 117/23 118/22 119/6  
 127/23 129/6 137/9 137/9  
 137/10 138/9 138/16  
 138/20 139/4 140/11  
 140/13 141/21 142/5 142/19  
 142/20 146/24 148/7  
 149/13 150/20 152/9  
 152/17 153/20 156/11  
 156/11 156/16 157/19  
 158/22 164/18 167/14  
 171/15 171/19 173/15  
 174/16 176/21 179/12  
 182/18 184/3 192/3 192/13  
 201/13 211/24 213/6 213/11  
 219/3 257/3  
**Yesterday** [1] 90/15  
**yet** [4] 110/17 132/9  
 187/24 223/4  
**yield** [1] 96/25  
**yoke** [1] 68/10  
**York** [3] 1/20 2/8 2/8  
**you** [840]  
**you'd** [4] 139/19 145/1  
 165/12 230/4  
**you'll** [1] 109/10  
**you're** [59] 14/24 16/1  
 16/21 24/10 24/10 26/17  
 36/12 40/6 40/22 46/21  
 52/19 60/23 61/20 69/8  
 71/6 72/9 75/8 85/24  
 86/2 87/18 93/3 94/1  
 95/20 97/21 98/3 102/15  
 104/9 106/24 108/6 121/4  
 124/3 130/14 130/23  
 138/17 147/9 150/11 152/7  
 154/20 154/21 155/11  
 156/10 171/16 176/22  
 178/24 183/11 183/15

187/18 194/5 202/16 213/7  
 217/16 219/3 219/3 229/5  
 230/17 230/25 250/20  
 250/21 251/13  
**you've** [39] 7/11 12/12  
 13/25 15/11 17/19 19/9  
 19/23 20/16 23/18 36/4  
 38/9 54/19 62/7 64/24  
 67/7 72/21 76/18 82/6  
 87/6 90/23 95/9 96/19  
 100/14 103/12 106/11 109/4  
 110/9 111/10 112/7 119/8  
 124/10 125/2 129/17  
 135/18 155/24 165/25  
 184/5 211/16 257/3  
**young** [1] 5/16  
**your** [350]  
**yours** [2] 115/19 115/19  
**yourself** [4] 14/8 71/8  
 152/20 174/22

## Z

**zero** [1] 90/1  
**ZOIE** [3] 262/4 262/17  
 262/17  
**zwilliams.rmr** [1] 262/21